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## THE EARLY DIAGNOSIS OF CANCER OF THE CERVIX.[1]

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DURING the last decade much publicity has been given to the question of cancer in Australia. The provision of an ample supply of radium by the Commonwealth Government and the raising of funds in the various States for research and treatment have made a marked impression on the public mind, and have stimulated all branches of the medical profession to take a deeper interest in the subject.

As gynæcologists, we have naturally concentrated upon the most prevalent malignant growths of our specialty, namely, uterine cancer, and especially on those that originate in the *cervix uteri*.

Mature medical opinion throughout the world is agreed that cancer of the *corpus uteri* should be treated surgically; but there is not the same unanimity about the treatment of cervical cancer, some putting their faith in radium or surgery alone, others believing in the combined treatment by radium *plus* operation. Apart from these differences in the details of treatment, the whole profession has come to recognize that the earlier the patients are seen, the better the results, no matter what method of treatment is adopted. Even the public has been more or less educated by the prominence given to

[1] Read at the ninth Australian Cancer Conference, April, 1938.

conferences and newspaper articles to recognize this fact, and sufferers are now reporting to their medical practitioner and to cancer clinics at a much earlier stage of the disease than formerly.

Thus we have arrived at the stage when any further improvement of results depends upon the medical profession becoming more proficient (*a*) in the recognition of the predisposing causes of cancer, and (*b*) in the improvement of their diagnosis of doubtful and early cases.

We have already written and published several papers on the prevention of uterine cancer, in which stress was laid on the importance of chronically infected lacerated cervices and of endocervical infections as predisposing causes of malignant disease. We also pointed out the danger of residual cervices, with their restricted blood supply, and brought under suspicion the numerous superficial cell changes of the *portio vaginalis*, such as leucokeratosis, leucoparakeratosis and leucohyperkeratosis, more particularly when they have invaded the crypts of the cervical glands and other indentations of the cervix. We also brought forward the malignant possibilities of desquamated patches and of small ulcerations that resist appropriate and long continued palliative treatment. Lastly, polypi and papules, endometrial hyperplasias, fibromyomata and endometriomata, syphilitic ulcerations and myopathic uteri were also discussed as possible precursors of cancerous growths.

In our clinic we have adopted, since 1928, a routine measure of examining microscopically the whole of the tissues and organs removed at operation, and our interest has been arrested by the almost constant association of uterine cancer with chronic metritic and salpingitic changes. We propose to investigate this more than casual relationship, and believe that we will be able to establish the fact that old residual inflammation of the genital tract prepares the way for cancerous involvements as frequently as it does for ectopic gestations in the Fallopian tubes.

Being fully seized with the importance of the predisposing causes of cancer, we must next give our earnest attention to the visual and manual recognition of suspicious conditions of the *portio vaginalis* of the cervix, as well as of frank carcinomatous surface coverings, with or without invasion or ulceration, that is, cancer *in situ*.

The introduction of the colposcope by Hinselmann, of Hamburg, has proved a veritable "third eye" in the clinical examination of the cervix. The more it is used, the more will its value be appreciated. The technique of its use and the interpretations of the magnified fields seen can be acquired only by constant practice. Both Hinselmann and Schröder advise its routine employment in gynæcological examinations. In this clinic we are as yet only beginning to realize fully its possibilities.

Manual examination of course is known to every clinician, but there is one point we should like to emphasize: always visually test contact bleeding. Next, it goes without saying that any suspicious patch found should be removed by biopsy and submitted to a competent pathologist for diagnosis. However, we go further, and are more than convinced that the surgeon who removes the patch should make himself thoroughly familiar with the microscopic findings; and it is with this object in view that we have undertaken this demonstration today.

First, the surgeon must familiarize himself with the normal histology of the *cervix uteri*, and especially must he pay attention to that important transitional zone where the squamous meets the epithelium at the *os externum* (see Figure I).

The heaped-up squamous epithelium can be seen abruptly and sharply changing over to the columnar lined cervical mucosa at the external os. The columnar epithelium of the cervical canal has the peculiarity that the nuclei are situated at the base of the cell and the remainder of the cytoplasm is clear and contains abundant mucus. In contrast, the columnar cells of the corpus have their nuclei centrally placed.

This transitional zone of the epithelial change-over is most important microscopically, as in the healing process of cervical tears its sharp-cut nature is disarranged and frequently small islands of one or other epithelium are cut off, isolated and imprisoned in foreign surroundings. Invasions and encroachments also take place in this area during the course of inflammatory processes. Sometimes denudations and scarring separate the two types of epithelium by a considerable distance, and even a shallow ulcer might develop at the site.

The surgeon should also have a clear picture before his mind of the two common end-results of chronic inflammatory processes in the cervix proper. First, papillary erosion (Figure II): this causes fibrotic changes in the deeper cervical tissue, as well as hypertrophy of the lining mucosa, which extends beyond the external os to replace the squamous epithelium of the *portio vaginalis*. Most of the change is by surface extension, by a pouring out, as it were, of inflamed glandular mucosa to spread in an annular fashion around the *os externum*; but, *pari passu*, inflammation in the racemose and cellular tissue under the surface is proceeding, the columnar cells of the glands hypertrophy, and the glands are pressed towards the vaginal surface of the cervix, some opening on it. The stroma between the glands is also active, being packed with round cells, and the papillæ under the surface eat their way through and become exposed. These later give the condition its characteristic red and shaggy appearance.

If this papillary erosion is of long standing there is an attempt at repair, so that the mouths of the glands become occluded either by the epithelium growing over them or by the accompanying fibrotic contraction (see Figure III). The result is a number of small retention cysts filled with viscid mucus, which bulge with a glistening surface on the vaginal aspect as well as occurring in the deeper parts of the cervix. This condition is called

follicular erosion, and the small cysts are called Nabothian follicles. In many erosions both types are present, which merely indicates that destructive as well as the reparative processes are taking place at the same time.

There is a group of cellular changes in the cervix that the amateur or not fully trained pathologist often mistakes for early carcinoma. This fact accounts for the absurdly high rate of five-year cures claimed for radium by certain cancer workers. These changes are called metaplasia. At first sight they closely resemble cancer, but observation has proved them to be non-malignant. The earliest stages of metaplasia show hypertrophy of the columnar epithelium, with elongation of the cells. The nuclei, instead of being in one uniform layer at the base, become crowded together at various levels; sometimes two distinct layers of nuclei can be seen (see Figure IV). At a later stage there is a layer of undifferentiated cells between the base of the columnar cells and the basement membrane. This layer, which increases in thickness, is seen both on the surface mucosa and in the glands. Still later layers of undifferentiated cells are found without columnar cells over them.

In the glands the new epithelium proliferates and the original gland lumen becomes subdivided, giving a lace-like appearance (see Figure V).

Finally, the gland may be completely filled with cells which assume a definitely squamous type, with intercellular prickles.

Changes in the direction of malignancy are the following. In the preceding metaplasic states the cells are uniform in size, shape and arrangement, with nuclei uniform in size, shape and staining qualities. As the condition tends towards malignancy, the cells become more irregular, the nuclei become hyperchromatic, and more irregular in arrangement, size, shape and staining. All grades can be found between the simple metaplasia and the next group, which is malignant change in the epithelium without invasion (see Figure VI).

This non-invasive malignant change is called carcinoma *in situ* (see Figure VII). Here the cells have a definitely malignant appearance; the nuclei are extremely hyperchromatic, somewhat irregular in size and shape, larger, darker and more irregularly arranged than in the simple metaplasia. There is no evidence of invasion by the cells. The terminology of this group is open to dispute. It may be called pre-malignant, and is regarded as cancer by the clinicians, if not by the pathologists. For descriptive purposes, the cells may be said to have the appearance of malignant cells, but without obvious malignant behaviour; in other words, invasion is the only acid test of cancer. Sometimes, when a gland is filled with cells of this type, the appearance of massive invasion is imitated, yet the outline of the mass is very regular and no active breaking away is seen. Traces of some of the original columnar epithelium of the occupied gland can often be found in cases of this sort. With all due deference to the pathologists, as clinicians we feel that there must be a definite time when the metamorphosis from the normal to the malignant cell takes place, and this change must precede invasion of the surrounding tissues. Thus this group is legitimately called cancer *in situ*.

The next group is considered by both pathologist and clinician as early carcinoma, for, in addition to the cellular changes described in the preceding group, definite invasion of the surrounding tissue can be demonstrated (see Figure VIII).

Finally, we come to the group of frank cancer, of which there are four main types: the anaplastic type, the transitional type, squamous epithelioma, and adenocarcinoma.

In the anaplastic type (Figure IX) the cells are least differentiated and are called unripe. They are irregular in size, but often very small, and they invade in a diffuse manner. The nuclei are very unequal in size and stain unequally. It may be difficult in parts to distinguish carcinoma cells from some of the stroma cells, especially under the low power microscope. The carcinoma cells are not found in well-defined masses, but are profuse and bolshevistic in arrangement. They are rapid growing, but readily respond to radium treatment.

In the transitional type (Figure X) the cells, neither anaplastic nor typically squamous, are usually found in large, fairly well-defined masses. The nuclei are large and hyperchromatic, irregular in size and shape. The cytoplasm is relatively scanty. The cells may show evidence of transition towards the squamous type, with the formation of whorls or occasional squamous cells. This type is called mid-ripe.

Squamous epithelioma is the fully ripe type, which displays well-defined masses of growth (see Figure XI). The majority of the cells are large and pale-staining, with abundant cytoplasm, and are typical squamous cells such as are found in the *rete Malpighii*. Intercellular prickles can be seen; keratinization is a marked feature, although the keratin may not be fully formed—that is, the nuclei still persist.

Adenocarcinoma takes origin from the racemose glands of the cervix. It is characterized by the reproduction of the gland-like structure, which varies in different parts. In some adenocarcinomata (Figure XII) acini are well formed and clearly indicate the tissue from which they arise; in others, large medullary masses of carcinomatous cells are seen, containing small acini. Although these various types of frank cancer are described, there is no hard and fast distinction, as we have many times found all varieties represented in one and the same cervical growth.

In conclusion, we trust that these few remarks on early carcinomatous change in the *cervix uteri* will serve to stimulate a greater interest in the differentiation of the various types of growths which you will be called upon to treat in the future, and will help to improve your clinical acumen in discovering and diagnosing your cases earlier and earlier.

# THE TREATMENT OF CANCER OF THE CERVIX UTERI.[1]

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DURING the fifty-five years' existence of the Royal Prince Alfred Hospital some 1,580 patients suffering from uterine cancer have been admitted. A study of the gross statistics reveals, as in all other clinics of the world, that cancer of the cervix is the more frequent and deadly variety of this human scourge. It accounted for 1,382 of the 1,580 uterine cancers. It also clearly demonstrates that cervical cancer is mainly a disease of the parous woman, approaching or past the menopause. A closer study of our more recent cases has led us to suspect that chronic inflammatory processes of the uterus and adnexa nearly always precede the development of malignant disease in this region.

Until 1930 the treatment of cervical cancer at the Royal Prince Alfred Hospital was almost entirely surgical, either palliative or radical, only a few of the patients being submitted to radiotherapy, or a combination of radiotherapy with radical surgery. Furthermore, the routine practice of submitting material to the pathologist for biopsy was not in force in all cases.

For these reasons we present today only 270 cases of cervical cancer, seen from the beginning of 1930 to the end of 1937, all of which have been confirmed as frank cancer by our pathologist, Dr. Geoffrey Davies. During the same period we have, however, encountered 128 cases of metaplasia and other intermediate or precancerous conditions of the cervix. These we have excluded; but we believe that all pathologists are not so conscientious, or probably not competent enough to differentiate these metaplasias from frank cancer—a fact which may account for the grave differences in the cure rates published by various world-renowned clinics.

Another discrepancy that creeps into cancer treatment statistics is caused by carelessness or by inability to group cervical growths into their four stages. For, just as the mixing up of frank cancers with metaplasias plays havoc with the absolute cure rate, so does this failure to group correctly destroy the value of the relative cure rate.

Of the 270 cases of frank cancer in our series, we are now in a position to give the five-year results in 108, that is, in the cases that have been seen or treated in 1930, 1931 and 1932. Before going into these statistics we shall describe briefly our method of treatment.

[1] Read at the ninth Australian Cancer Conference, April, 1938.

We have adopted a hard-and-fast routine, which is as follows:

1. Apart from the official history and notes of the hospital, all cancer cases are recorded in special loose-leaf books kept in the department. The books of patients who are treated surgically or by the combined method have brown covers; the books of those treated by radiotherapy alone or untreated have pink covers; and the books of all patients with metaplasia and precancerous conditions have blue covers.

2. The cases are grouped only after a thorough examination has been made clinically, as well as by the colposcope and under anæsthesia.

3. A Wassermann test for syphilis and a blood count for anæmia are carried out.

4. A biopsy and diagnostic curettage are performed, and the material is submitted to the pathologist.

5. Radium is inserted in all cases, excepting in those that are very advanced, that is, in cases of frozen pelvis, remote metastatic involvement, complete rigidity of the vagina or gross invasion of the bladder and rectum.

6. All patients are reexamined carefully at the end of five weeks in order to ascertain operability. Debilitated patients or those requiring building up by some ancillary treatment are kept in hospital; others are allowed to go home after eight to ten days and are readmitted in the fifth week.

7. The patients who display even slight uterine mobility are submitted to the radical Wertheim operation. Those who are deemed inoperable are reserved for radiotherapy.

8. A detailed description of the removed organs, as well as of the state of the parametria and lymphatic glands, is recorded.

9. The fifth day after operation the pathologist demonstrates microscopically the original biopsy, the radium-treated uterus, the Fallopian tubes, the ovaries, the parametrial tissues and the lymphatic glands. The surgeon and pathologist examine the removed organs, and the sites from where the sections were taken are pointed out.

10. A full description of the pathological findings is recorded in the special history book, and the case is followed up regularly.

### Grouping of Cancer of Cervix Uteri.

We have closely followed out the definitions of the four stages of cancer of the cervix as laid down by the League of Nations Health Organization, and in all other respects have conformed to the recommendations given in its first annual report on the results of radiotherapy in cancer of the uterine cervix (see Table I).

### Application and Dosage of Radium.

With the exception of those with very advanced Stage IV growths, all patients presenting themselves for treatment have one large dose of radium applied. We irradiate the whole length of the

uterine cavity by inserting 50 milligrammes of radium element screened by 1·5 millimetres of platinum in a rubber-covered tube. We place in the lateral fornices two rubber-covered corks, each containing 20 milligrammes of radium element screened by a double thickness of platinum, two millimetres. After much experimentation with dosage in the early cases, we came to the conclusion that the ideal dose for good results was 5,000 milligramme hours, and most of the patients whose five-year results we present today have had that dosage. As a result of our study of irradiated tissues we have recently increased the dosage to between 6,000 and 7,000 milligramme hours.

TABLE I.

*Definition of the Stages of Cancer of the Cervix Uteri.*

| Stage. | Extent of Growth. |
|---|---|
| I | The growth is strictly limited to the *cervix uteri*. The uterus is mobile. |
| II | Lesion is spreading into one or more fornices, with or without infiltration of the parametrium adjacent to the uterus, the uterus retaining some degree of mobility. |
| III | (*a*) Nodular infiltration of the parametria on one or both sides, extending to the wall of the pelvis, with limited mobility of the uterus or massive infiltration of one parametrium, with fixation of the uterus.<br>(*b*) More or less superficial infiltration of a large part of the vagina, the uterus being mobile.<br>(*c*) Isolated metastases in the pelvic glands, with a relatively small primary growth.<br>(*d*) Isolated metastases in the lower part of the vagina.<br>(Generally speaking, all cases not falling into Stage II or IV will be placed under Stage III.) |
| IV | (*a*) Massive infiltration of both parametria extending to the walls of the pelvis.<br>(*b*) Carcinoma involving the bladder or rectum.<br>(*c*) The whole vagina infiltrated (rigid vaginal passage), or one vaginal wall infiltrated along its whole length; fixation of the primary growth.<br>(*d*) Remote metastases. |

We have found that the use of radium usually reduces the size of the growth and helps any adventitious inflammatory induration to disappear, thereby making movable a growth that was originally fixed. Thus, the use of radium rendered many border-line and some apparently inoperable growths operable. Our operative experience has taught us that all growths that have not broken through their uterine shell are easily extirpated. But above all we learned that radium, by virtue of its healing powers, eradicates all sepsis, and is the best surgical antiseptic yet met with. We believe that it is this characteristic of radium which has allowed us to perform the fifty-one radical Wertheim operations occurring in our five-year results with one operative death, which was due to volvulus with intestinal obstruction. In our cases there was little or no post-operative morbidity.

On studying the old records of the hospital we found that the high mortality rate after Wertheim's operation was mostly due to septic peritonitis. Radium, by giving a clean vaginal field, has almost eliminated this risk, and accounts for our wonderful and almost unbelievable operative figures, unequalled, we think, in any part of the world.

### Operability.

Our operability rate for the whole series treated (260 cases) was 45·8%, and for the cases yielding the five-year results presented today (103 cases) it was 49·5%. Thus, radium had rendered operable almost half the cases treated. Whenever the uterus could be moved, the parametria being more or less pliable and no obvious fixation to the bladder or rectum being discovered, the patient was further investigated by laparotomy before it was decided that the growth could not be removed. Even considerable extension onto the vaginal walls was not taken as a contraindication to operation, provided the invasion was superficial.

TABLE II.

*The Total Number of Frank Cancer Cases (diagnosis made by microscopic examination) seen from January 1, 1930, to December 31, 1937, a period of eight full years.*

| Methods Employed. | Number of Cases. |
|---|---|
| (*a*) Radium *plus* surgery— | |
| (i) Radium and Wertheim | 87 |
| (ii) Radium and panhysterectomy | 4 |
| (iii) Radium and abdominal cervicectomy | 3 |
| (iv) Radium and vaginal cervicectomy | 4 |
| (*b*) Surgery alone— | |
| (i) Wertheim | 7 |
| (ii) Panhysterectomy | 12 |
| (iii) Total hysterectomy | 2 |
| (iv) Diagnostic surgery | 10 |
| (*c*) Radium alone | 131 |
| (*d*) No treatment given | 10 |
| Total | 270 |

(NOTE.—The number of operable cases of a total of 270 was 119, and biopsy alone was performed in a further 10; the operability rate was 44·1%.)

The time of election for operation is, in our opinion, the fifth week after the application of radium. If operation is performed before that time the tissues are swollen and œdematous and bleed too freely. On the other hand, the longer the time allowed to elapse after the fifth week, the more difficult it is to isolate the ureters, as the tissues become either increasingly dry and cicatrized, or chronically swollen and indurated.

The intervening weeks between the application of the radium and operation are used to bring the patients to the highest pitch of physical fitness. Thorough local cleanliness, good food, sleep, attention to the bowels, blood transfusions, the administration of arsenic for the anæmic and anti-syphilitic treatment for those with a positive Wassermann reaction *et cetera* must all receive the surgeon's serious attention.

As regards radical Wertheim operations, we are strongly of opinion that none but clinics that lend themselves to the highest degree of team work should attempt to carry them out. The first and second assistants should have a knowledge of the operation equal to that of the surgeon himself.

### Operative Mortality and Morbidity.

Out of 112 Wertheim and other radical types of hysterectomy performed since the beginning of 1930, there were four operative deaths, giving a 3·5% mortality, probably the lowest yet recorded for this class of operation. Of these four deaths, it is hardly fair to classify two of them as operative deaths.

1. M.M. died six weeks after operation from what was thought to be embolism. No *post mortem* examination was allowed.
2. M.U. died nine weeks after operation from uræmia and pyelonephritis. At *post mortem* examination it was discovered that abdominal glands obstructed the ureter on the right side.
3. S.O'H. died from post-operative shock. The condition was complicated by partial intestinal obstruction due to a foreign body in the ileum. This was removed at the operation, and the ureter had to be transplanted into the bladder on account of involvement in the growth.
4. D.A. died from post-operative peritonitis. This was the first and only case of peritonitis in the whole series.

There was practically no morbidity in the whole series, patients being allowed up on the seventeenth day, as in ordinary section cases. If we exclude the first two cases recorded above, our operative death rate can be assessed at under 2% (1·7%), which must be deemed remarkable when compared with the 9% to 19% recorded in the clinics of Europe and America.

### Gland Involvement.

In the series of operation cases we found the pelvic lymphatic glands involved in about 21·3%. This is above the average reported from outside clinics, and shows that we have been very liberal in our selection of Stage III cases for operation. Whenever we found the obturator glands involved we expected and found an early recurrence. These glands drain the vault of the vagina and, when invaded, indicate that the growth has poured out and deeply involved the vaginal mucosa. Our microscopic experience has proved that radiotherapy makes no impression whatever on lymphatic metastases.

For this and other reasons we have practically given up sending patients who have been operated on for deep X ray therapy. The patients who were sent complained of much nausea, and I can honestly say that our patients do just as well now that we have ceased to submit them to this complementary method of treatment.

### Results.

A glance at the summaries, which compare our results with the six world-famous clinics participating in the First Annual Report of the Health Organization of the League of Nations, will show that, as far as the volume

TABLE III.

*Detailed Statistics and Follow-up of 87 Patients Treated by Radium and Wertheim Operation.*

| Dead. | | | | | Alive on April 6, 1938.[1] | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Number of Years after Operation | Number of Patients. | Group. | | | Number of Years since Operation. | Number of Patients. | Group. | | |
| | | I. | II. | III. | | | I. | II. | III. |
| *Op. D.*[2] | 4 | — | — | 4 | — | — | — | — | — |
| ½ | 2 | — | 1 | 1 | ½ | 3 | 1 | 2 | — |
| 1 | 11 | 2 | 3 | 6 | 1 | 4 | — | 2 | 2 |
| 1½ | 2 | — | — | 2 | 1½ | 3 | — | 2 | 1 |
| 2 | 4 | — | 1 | 3 | 2 | 5 | — | 2 | 3 |
| 2½ | 6 | — | 1 | 5 | 2½ | 2 | 1 | 1 | — |
| 3 | — | — | — | — | 3 | 3 | — | 1 | 2 |
| 3½ | 1 | — | 1 | — | 3½ | 5 | — | 3 | 2 |
| 4 | 1 | — | 1 | — | 4 | 2 | — | 1 | 1 |
| 4½ | — | — | — | — | 4½ | — | — | — | — |
| 5 | 1 | — | 1 | — | 5 | 5 | 2 | 2 | 1 |
| 5½ | — | — | — | — | 5½ | 10 | 2 | 5 | 3 |
| 6 | — | — | — | — | 6 | 3 | — | 3 | — |
| 6½ | — | — | — | — | 6½ | 2 | — | 1 | 1 |
| 7 | 1 | — | — | 1 | 7 | 4 | — | 2 | 2 |
| 7½ | — | — | — | — | 7½ | 3 | — | 3 | — |
| 8 | — | — | — | — | 8 | — | — | — | — |
| Total .. | 33 | 2 | 9 | 22 | — | 54 | 6 | 30 | 18 |

[1] Of the 54 who are still alive, 27 have been alive for longer than five years after treatment.
[2] *Op. D.* = Deaths immediately after operation.

TABLE IV.

*Results of the Use of Radium and Panhysterectomy in Four Cases.*

| Dead. | | | | | | Alive. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Years after Operation. | Number of Patients. | Group. | | | | Number of Years since Operation. | Number of Patients. | Group | | | |
| | | I. | II. | III. | IV. | | | I. | II. | III. | IV. |
| 1 | 2 | — | — | 2 | — | 1 | 1 | — | 1 | — | — |
| 2 | — | — | — | — | — | 2 | — | — | — | — | — |
| 3 | — | — | — | — | — | 3 | 1 | — | — | 1 | — |
| Total .. | 2 | — | — | 2 | — | | 2 | — | 1 | 1 | — |

(NOTE.—There was no operation death in this series; there are two patients still under observation.)

TABLE V.

*Results of Treatment by Radium and Radical Cervicectomy for Residual Cervices in Seven Cases.*

| Dead. | | Alive. | |
|---|---|---|---|
| Years after Operation. | Number of Patients. | Years since Operation. | Number of Patients. |
| *Op. D.*[1] | 1 | | |
| ½ | 1 | 4 | 1 |
| 1½ | 1 | 5 | 1 |
| 3 | 1 | 7 | 1 |
| Total .. | 4 | | 3[2] |

[1] *Op. D.* = Death immediately after operation.
[2] These three patients are still under observation.

TABLE VII.

*Results of the Treatment of Fourteen Patients by Panhysterectomy or Total Hysterectomy.*

| Years Since Operation. | Dead. | Alive. | | | | |
|---|---|---|---|---|---|---|
| | | Number of Patients. | Group. | | | |
| | | | I. | II. | III. | IV. |
| ½ .. .. .. | — | 1 | 1 | — | — | — |
| 1 .. .. .. | — | 1 | 1 | — | — | — |
| 1½ .. .. .. | — | 1 | 1 | — | — | — |
| 2 .. .. .. | — | 5 | 5 | — | — | — |
| 2½ .. .. .. | — | 1 | 1 | — | — | — |
| 4 .. .. .. | — | 4 | 4 | — | — | — |
| 5 .. .. .. | — | 1 | 1 | — | — | — |
| Total .. | — | 14 | 14 | — | — | — |

The fourteen patients are still under observation.

TABLE VI.

*Results of Treatment by the Radical Wertheim Operation in Seven Cases.*

| Dead | | | | | | Alive. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Years after Operation. | Number of Patients. | Group. | | | | Number of Years since Operation. | Number of Patients. | Group. | | | |
| | | I. | II. | III. | IV. | | | I. | II. | III. | IV. |
| 1 | — | — | — | — | — | 1 | 2 | — | 2 | — | — |
| 2 | 1 | — | — | 1 | — | 2 | — | — | — | — | — |
| 4 | 1 | — | 1 | — | — | 4 | — | — | — | — | — |
| 5 | 1 | — | 1 | — | — | 5 | — | — | — | — | — |
| 6 | — | — | — | — | — | 6 | 1 | 1 | — | — | — |
| 7½ | — | — | — | — | — | 7½ | 1 | — | 1 | — | — |
| Total .. | 3 | — | 2 | 1 | — | | 4 | 1 | 3 | — | — |

(NOTE—There were no deaths immediately following operation ; four patients are still under observation.)

TABLE VIII.

*List of the 32 Deaths following treatment by Radium and Wertheim Operation (a few cases showing death due to other causes).*

| Patient's Initials. | Date of Treatment. | Date of Death. | Number of Years. | Cause of Death. |
|---|---|---|---|---|
| G.A. .. .. .. .. | September 1, 1933. | December 9, 1935. | 2·25 | Metastases. |
| J.A. .. .. .. | July 31, 1931. | February 21, 1935. | 3·5 | Carcinoma of uterus ; secondary invasion of lumbar vertebræ. |
| D.A. .. .. .. | March 12, 1937. | April 16, 1937. | — | Post-operative general peritonitis. |
| A.B. .. .. .. .. | August 5, 1932. | March 24, 1935. | 2·5 | Cancer of cervix. |
| T.B. .. .. .. .. | August 18, 1933. | December 1, 1935. | 2·25 | —— |
| M.B. .. .. .. .. | July 14, 1933. | October 12, 1934. | 1·25 | —— |
| F.C. .. .. .. .. | February 6, 1931. | September 26, 1933. | 2·5 | Uræmia. |
| M.C. .. .. .. .. | December 7, 1934. | September 3, 1936. | 1·75 | Carcinoma of *cervix uteri* ; malignant infiltration of bladder. |
| A.C. .. .. .. .. | June 17, 1932. | August 31, 1933. | 1·0 | *Carcinoma uteri* ; uræmia. |
| A.D. .. .. .. .. | May 27, 1935. | August 6, 1936. | 1·25 | *Carcinoma uteri*. |
| M.D. .. .. .. .. | October 19, 1934. | October 28, 1936. | 2·0 | Extension of growth. |
| E.D. .. .. .. .. | July 5, 1935. | April 2, 1937. | 1·75 | Metastases. |
| L.H. .. .. .. .. | October 6, 1933. | May, 1935. | 1·5 | Metastases. |
| E.H. .. .. .. .. | September 4, 1936. | September 14, 1937. | 1·0 | *Carcinoma uteri* ; metastases. |
| E.H. .. .. .. .. | September 11, 1931. | August 27, 1932. | 1·0 | Metastases. |
| E.J. .. .. .. .. | July 22, 1932. | July 4, 1933. | 1·0 | Carcinoma of cervix ; secondary growths in lung. |
| A.M.J. .. .. .. | September 23, 1932. | June 7, 1933. | 0·75 | Secondary growths in liver. |
| S.L. .. .. .. .. | April 5, 1935. | June, 1937. | 2·0 | —— |
| P.MacD. .. .. .. | June 30, 1933. | July 27, 1935. | 2·0 | Acute myocarditis ; hypostatic pneumonia carcinoma of cervix, with metastasis. |
| E.M. .. .. .. .. | April 10, 1931. | March 2, 1935. | 3·9 | Carcinoma of cervix ; generalized metastases and asthenia. |
| M.M. .. .. .. | December 21, 1934. | February 1, 1935. | — | No examination made. |
| J.N. .. .. .. | August 18, 1933. | June 4, 1934. | 0·8 | Carcinomatous peritonitis ; intestinal obstruction. |
| S.O'H. .. .. .. | March 27, 1936. | June 12, 1936. | — | Carcinoma of uterus ; metastases in lymph glands ; post-operative shock. |
| H.R. .. .. .. .. | June 29, 1934. | January 16, 1935. | 0·5 | Cancer of uterus. |
| C.R. .. .. .. .. | August 2, 1932. | July 13, 1933. | 0·95 | Secondary hæmorrhage ; *carcinoma uteri*. |
| M.R. .. .. .. .. | August 30, 1935. | July, 1936. | 0·95 | —— |
| L.S. .. .. .. .. | October 13, 1930. | December 17, 1937. | 7·1 | *Carcinoma uteri*. |
| E.S. .. .. .. .. | September 9, 1931. | April 6, 1934. | 2·5 | Retroperitoneal hæmorrhage ; acute pancreatitis; gall-stones and cholecystitis. |
| L.S. .. .. .. .. | March 20, 1936. | July 2, 1937. | 0·45 | —— |
| E.S. .. .. .. .. | March 13, 1931. | April 18, 1936. | 5·0 | *Carcinoma uteri*. |
| M.C. .. .. .. .. | December 20, 1935. | February 18, 1936. | 0·1 | Right pyelonephritis ; uræmia. |
| H.W. .. .. .. | May 22, 1936. | March 11, 1937. | 0·8 | Cancer. |
| H.W. .. .. .. | May 29, 1936. | August 13, 1937. | 1·25 | Coronary occlusion. |

TABLE IX.

*Results of the Treatment of Patients with Radium only.*

| Dead. | | | | | | Alive. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Years after Treatment. | Number of Patients. | Group. | | | | Number of Years since Treatment. | Number of Patients. | Group. | | | |
| | | I. | II. | III. | IV. | | | I. | II. | III. | IV. |
| *Op. D.*[1] | 4 | — | — | — | 4 | — | — | — | — | — | — |
| 0 – ½ | 8 | — | 1 | 4 | 3 | ½ | 9 | — | — | 9 | — |
| ½ – 1 | 19 | — | — | 6 | 13 | 1 | 11 | — | 2 | 9 | — |
| 1 – 1½ | 13 | — | — | 10 | 3 | 1½ | 4 | — | — | 4 | — |
| ½–1 | 10 | — | 1 | 6 | 3 | 2 | 1 | — | — | 1 | — |
| 1 –1½ | 7 | — | — | — | 7 | 3 | 1 | — | — | 1 | — |
| 1½–1½ | 7 | — | 1 | 5 | 1 | 4 | 3 | 1 | — | 2 | — |
| 1½–1½ | 2 | — | — | 1 | 1 | 7 | 1 | — | 1 | — | — |
| 1½–2 | 4 | — | — | 2 | 2 | | | | | | |
| 2 –3 | 2 | — | — | 2 | — | | | | | | |
| 3 | 1 | — | — | 1 | — | | | | | | |
| Total .. | 77 | — | 3 | 37 | 37 | | 30 | 1 | 3 | 26 | — |

[1] *Op. D.*—Operation deaths.

(NOTE.—There were 131 patients, of whom 24 could not be traced; 30 are still under observation. Outside the period under review, that is, before 1930 two patients were treated: one died 8 years and 2 months after treatment; one is alive 8½ years after treatment.)

TABLE X.

*Results of Treatment of Patients suffering from Carcinoma Cervicis (verified by biopsy) by Radical Wertheim Operation, prior to 1930. (These have not been included in the series under review.)*

| Dead. | | | | | | Alive. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Years after Operation. | Number of Patients. | Group | | | | Number of Years since Operation. | Number of Patients. | Group. | | | |
| | | I. | II. | III. | IV. | | | I. | II. | III. | IV. |
| *Op. D.*[1] | 1 | — | 1 | — | — | — | — | — | — | — | — |
| ½ | 1 | — | — | 1 | — | 8½ | 1 | — | 1 | — | — |
| 1 | 4 | 1 | 2 | 1 | — | 9½ | 1 | — | 1 | — | — |
| 2 | 3 | 1 | 2 | — | — | 10½ | 1 | 1 | — | — | — |
| 2½ | 3 | — | 3 | — | — | 14 | 1 | — | 1 | — | — |
| 3 | 2 | 1 | — | 1 | — | 17 | 1 | — | — | 1 | — |
| 6 | 1 | — | — | 1 | — | | | | | | |
| 7 | 1 | — | — | 1 | — | | | | | | |
| 10 | 1 | — | 1 | — | — | | | | | | |
| 11 | 1 | — | — | 1 | — | | | | | | |
| Total .. | 18 | 3 | 9 | 6 | — | | 5 | 1 | 3 | 1 | — |

[1] *Op. D.*—Death immediately after operation.

(NOTE.—There were 28 patients, of whom five were not traced and five are still under observation.)

TABLE XI.

*Figures obtained from the First Annual Report of the Health Organization of the League of Nations on the Five-year Results of Radiotherapy in Cancer of the Cervix.*

| The Centre. | Total Number Seen. | Total Number Treated. | Alive after Five Years. | Absolute Cure Rate. | Relative Cure Rate. |
|---|---|---|---|---|---|
| | | | | % | % |
| The Centre, Belgium (Professor J. Murdoch) .. | 94 | 83 | 14 | 14·9 | 16·9 |
| Radium Institute, Liverpool (Doctor P. Malpas) .. | 92 | 89 | 25 | — | 28·1 |
| Marie Curie, London (Doctor Elizabeth Hurdon) .. | 142 | 136 | 56 | 39·4 | 41·2 |
| Radium Centre, L.C.C. (Sir Comyns Berkeley) .. | 66 | 57 | 10 | 15·2 | 17·5 |
| Radium Institute, Paris (Doctor A. Lacassagne) .. | 158 | 111 | 52 | — | 46·8 |
| Radiumhemmet, Stockholm (Doctor J. Heyman) .. | 205 | 198 | 50 | 24·4 | 25·3 |
| Royal Prince Alfred Hospital, Sydney (Doctor H. H. Schlink and Doctor C. L. Chapman) .. .. | 108 | 103 | 33 | 30·5 | 32·0 |

*An Analysis of Royal Prince Alfred Hospital Results to Indicate the Relative Value of Radium plus Surgery and Surgery alone, Compared with Radium alone.*

| | | | | | |
|---|---|---|---|---|---|
| (a) Surgery and radium .. .. .. .. | 51 | 51 | 32 | 62·7 | 62·7 |
| (b) Radium alone .. .. .. .. .. | 57 | 52 | 1 | 1·7 | 1·9 |

TABLE XII.

*Relative Five-Year Cure Rate of Radiotherapy in Cancer of Cervix (Health Organization of the League of Nations).*

| The Centre. | Stage I. | | | Stage II. | | | Stage III. | | | Stage IV. | | | Total Stages I–IV. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Treated. | Alive. | Per-centage. | Treated. | Alive. | Per-centage. | Treated. | Alive. | Per-centage. | Treated. | Alive. | Per-centage. | Treated. | Alive. | Per-centage. |
| The Centre, Belgium (Professor J. Murdoch) | 9 | 4 | 44·4 | 27 | 3 | 11·1 | 35 | 7 | 20·0 | 12 | 0 | 0·0 | 83 | 14 | 16·8 |
| Radium Institute, Liverpool (Doctor P. Malpas) .. .. | 13 | 9 | — | 26 | 12 | 46·2 | 29 | 4 | 13·8 | 21 | 0 | 0·0 | 89 | 25 | 28·1 |
| Marie Curie, London (Doctor Elizabeth Hurdon) .. .. | 6 | 5 | — | 32 | 21 | 65·6 | 81 | 27 | 33·3 | 17 | 3 | 17·6 | 136 | 56 | 41·2 |
| Radium Centre, L.C.C. (Sir Comyns Berkeley) | 3 | 2 | — | 24 | 5 | 20·8 | 18 | 1 | 5·6 | 12 | 2 | — | 57 | 10 | 17·5 |
| Radium Institute, Paris (Doctor A. Lacassagne) | 16 | 12 | 75·0 | 34 | 19 | 55·9 | 47 | 16 | 34·0 | 14 | 5 | — | 111 | 52 | 46·8 |
| Radiumhemmet, Stockholm (Doctor J. Heyman) .. .. | 12 | 5 | — | 60 | 26 | 43·3 | 93 | 16 | 17·2 | 33 | 3 | 9·1 | 198 | 50 | 25·3 |
| Royal Prince Alfred Hospital, Sydney (Doctor H. H. Schlink and Doctor C. L. Chapman) .. .. | 9 | 5 | 55·5 | 35 | 21 | 60·0 | 41·0 | 7 | 17·0 | 18 | 0 | — | 103 | 33 | 32·0 |
| *Analysis of the Relative Cure Rate of Surgery plus Radium and Surgery alone, compared with Radium alone, Royal Prince Alfred Hospital.* | | | | | | | | | | | | | | | |
| (a) Surgery and radium | 8 | 5 | 62·5 | 29 | 20 | 68·9 | 14 | 7 | 50·0 | — | — | — | 51 | 32 | 62·7 |
| (b) Radium alone .. | 1 | 0 | 0·0 | 6 | 1 | 16·6 | 27 | 0 | 0·0 | 18 | 0 | 0 | 52 | 1 | 1·9 |

of work and the results achieved in cases under observation for five years or over are concerned, our clinic makes an excellent showing. Furthermore, the relative cure rates of our surgically treated patients excel any figures we have seen published. To obtain 62·7% of five-year cures in first, second and third stage growths (68·9% in Stage II and 50% in Stage III growths) is something with which to be well content.

TABLE XIII.

*Absolute and Relative Cure Rates.*

Absolute Cure Rate.

| Number of Patients. | Alive Without Recurrence Five Years after the Beginning of Treatment. | Cure Rate. |
|---|---|---|
| 108 | 33 | 30·5% |

On the other hand, we are distressed at the poor showing of those patients who were treated by radium alone. We have only one patient alive after five years' observation. Practically the rest of the fifty-two patients died before they reached

TABLE XIII.—*Continued.*

Relative Cure Rate.
(Radium and Surgery and Surgery Alone.)

| Stage. | Number of Patients. | Alive Without Recurrence Five Years after the Beginning of Treatment. | Cure Rate. |
|---|---|---|---|
| I .. .. | 8 | 5 | 62·5% |
| II .. .. | 29 | 20 | 68·9% |
| III .. .. | 14 | 7 | 50·0% |
| IV .. .. | — | — | — |
| I–IV .. .. | 51 | 32 | 62·7% |

Relative Cure Rate.
(Radium alone.)

| | | | |
|---|---|---|---|
| I .. .. | 1 | — | — |
| II .. .. | 6 | 1 | 16·6% |
| III .. .. | 27 | — | — |
| IV .. .. | 18 | — | — |
| I–IV .. .. | 52 | 1 | 1·9% |

TABLE XIV.

*Results of Surgical Treatment estimated after a period of observation of five years, dating from the beginning of treatment.*

| Stage. | 1 Number of Patients Treated with Surgery. | 2 Alive without Recurrence. | 3 Alive with Recurrence. | 4 Patients Alive Operated upon after Failure of Radiotherapy. | 5 Died of Cancer. | 6 Lost Sight of. | 7 Died of Intercurrent Disease. |
|---|---|---|---|---|---|---|---|
| I .. | 8 | 5 | — | — | 3 | — | — |
| II .. | 29 | 20 | — | — | 9 | — | — |
| III .. | 14 | 7 | — | — | 6 | — | 1[1] |
| IV .. | — | — | — | — | — | — | — |
| I–IV .. | 51 | 32 | — | — | 14 *plus* 4 (?) | — | 1 |

[1] Acute pancreatitis.

TABLE XV.

*Results of Treatment with Radium estimated after a period of observation of five years, dating from the beginning of treatment.*

| Stage. | 1 Number of Patients Treated with Radium. | 2 Alive without Recurrence. | 3 Alive with Recurrence. | 4 Patients Alive Operated upon after Failure of Radiotherapy. | 5 Died of Cancer. | 6 Lost Sight of. | 7 Died of Intercurrent Disease. |
|---|---|---|---|---|---|---|---|
| I .. | 1 | — | — | — | — | 1 | — |
| II .. | 6 | 1 | — | — | 3 | 2 | — |
| III .. | 27 | — | — | — | 18 | 8 | 1[1] |
| IV .. | 18 | — | — | — | 16 | 2 | — |
| I–IV .. | 52 | 1 | — | — | 33 *plus* 4 (?) | 13 | 1 |

[1] Carcinoma of palate.

the end of their second year of observation, and the immediate death rate with radium was higher than that with surgery. There were four immediate deaths among 52 patients treated by radium (7·7%) compared with 3·5% for the 51 patients treated by surgical operation. In our hands surgery is far safer than radium. It may be said that the radium-treated cases were more advanced; certainly the deaths were all of patients in Stage IV. The comparison is shown in Table XVI.

TABLE XVI.

*Comparison of Results of Treatment with Surgery and Radium.*

| Stage. | Relative Numbers Treated by Surgery and Radium. | |
|---|---|---|
| | Surgery. | Radium. |
| Stage I ..... | 8 | 1 |
| Stage II ..... | 29 | 6 |
| Stage III ..... | 14 | 27 |
| Stage IV ..... | 0 | 18 |
| Total ..... | 51 | 52 |

We might mention that, in our mortality statistics, no account has been taken of patients dying from intercurrent diseases, all deaths being put down as due to cancer. In future statistics we shall make an effort to unearth deaths from intercurrent disease.

Our experience has convinced us that it is best to leave the very advanced cases alone; we now only curette away the necrosing tissues and apply zinc chloride or acetone. This procedure relieves the patients of bleeding and discharge and makes their end more comfortable.

Finally, we have convinced ourselves that radium is not a cure, as it cannot affect metastases in the glands, its action being mainly local. However, we believe in its use preoperatively on account of its local sterilizing and healing qualities. We are firmly convinced that in every case possible the cancer patient should be submitted to radical surgery. By removing the uterus, which is usually senile and subject to age-period degeneration, we know we are doing the best for our patients, even if the procedure does entail and eat up an enormous amount of personal energy which the radiologists say we expend unnecessarily.

### Conclusion.

The papers and demonstrations you have witnessed this morning represent the type of the work on uterine cancer which our team is carrying out at the Royal Prince Alfred Hospital. We hope to have larger statistics, which will include ten-year results, in 1940.

### Acknowledgements.

We should like to take this opportunity of thanking our co-workers: Dr. Geoffrey Davies and his technician, Mr. Newson, for the full cooperation which they have given us in the pathological work; Dr. Fredrick Chenhall, who has "burnt the midnight oil" compiling all the figures that have been shown to you this day; Dr. Muriel McIlrath for her patience in going over all the histories of metaplasia and pre-cancer; Mr. Woodward Smith, who has cooperated with enthusiasm to make our photographic films; Professor D. A. Welsh, for the sympathy and consultative work which he was always willing to give.

We must also thank the nurses and clerical staff of the hospital, and should like to convey to the Registrar-General, Mr. R. W. Willis, and to the Secretary of Police, Mr. Baldwin, our appreciation for their efforts in allowing us to present our surgical statistics without the omission of one case.

Ladies and gentlemen, when you recollect that all the work that such a demonstration as you have witnessed has called for had to be done in an honorary capacity, and in time taken from the strenuous routine duties of hospital workers and busy practitioners, you will understand that we feel justified in claiming some help and assistance for the clinical investigation of cancer in our hospitals, where so much clinical material exists. We have already applied for some financial assistance to improve our laboratory facilities and to enable us to tabulate the wealth of pathological material which is accumulating day after day. Undoubtedly our work cannot be called research in the true sense of the word, but we are gathering facts that must be of inestimable value to all interested in this subject.

# CASUALTY SURGERY.[1]

By ARCHIE ASPINALL,
*Honorary Surgeon, Sydney Hospital.*

## Guiding Principles.

THERE are certain main principles to be borne in mind in all accident cases: (i) the control of hæmorrhage, (ii) the prevention of further shock or combating of shock, (iii) the prevention of sepsis, (iv) the restoration of function, (v) attention to the medico-legal aspect.

### *The Control of Hæmorrhage.*

The immediate control of hæmorrhage is vital. Many patients arrive at hospital with a tourniquet more or less efficiently applied. A knowledge of the pressure points for the control of hæmorrhage is essential. The tourniquet should be removed at the earliest possible moment and bleeding vessels caught with pressure forceps. A tourniquet increases shock and favours the onset of sepsis by devitalizing the tissues.

### *The Prevention of Shock.*

Nowadays many accidents are caused by motor vehicles, and the violence is often great and shock profound. Every effort must be made to overcome shock. Prolonged immediate examination of the patient is to be avoided. Get the patient to bed and endeavour to restore warmth by all means possible. Give morphine if pain is severe, once a diagnosis has been made. Attempt to raise the blood pressure by such measures as the injection of saline solution or gum-saline and blood transfusion. It is not uncommon in hospital to see a patient in a state of severe shock exposed whilst being undressed by the nurse and even being washed before any attempt has been made to combat the shock.

### *The Prevention of Sepsis.*

The prevention of sepsis largely depends on the time elapsing between the injury and the treatment of the wound. An operation undertaken within nine hours of the accident offers a reasonable hope of avoiding infection. Do not forget that unskilful attempts at cleansing a wound often result in infecting the wound. Wounds in patients who have been working with machinery and are covered in oil or grease heal well if not contaminated after arrival at hospital. Close suturing of wounds is a prolific source of evil.

Gas gangrene occurs in civil practice and must be borne in mind.

### *The Restoration of Function.*

From the outset attention must be directed towards the restoration of function. Faulty posture is to be guarded against. For example, a stiff wrist and limited dorsiflexion after an injury to the hand are often seen, attention having been concentrated on movements of the fingers while the movements of the wrist have been overlooked.

### *The Medico-Legal Aspects.*

A careful history of the accident is most important, as treatment depends on the diagnosis. For example, the history of a crushing injury will suggest the possibility of a ruptured viscus although at the time of examination the condition of the patient may be good and obvious signs of internal injury may be absent.

Again, the most obvious injury is frequently not the only or most serious one. It is not a bad plan to examine the patient rapidly from the head downwards, at the same time thinking of the most common injuries occurring in each region. The old dictum to examine every orifice of the body is a wise one.

Nowadays every accident case must be regarded from its medico-legal aspect. Actions for damages for alleged negligence on the part of the medical attendant are becoming increasingly common. Therefore it is necessary that accurate records should be kept and consultations held in troublesome cases. Much importance is attached by the courts to X ray examination.

In dealing with a dislocated shoulder, the discovery of nerve injury and the demonstration of it to the patient or his relative or friend before the administration of an anæsthetic, will prevent an accusation of causing the injury at the time of reduction. This is an example of how the bearing of medico-legal possibilities in mind may be the means of preventing trouble.

## Compound Fractures.

The sooner compound fractures are dealt with the better. In hospital practice these should be treated in the operating theatre night or day as soon as the condition of the patient permits.

My own practice is to clean the wound myself, avoiding the use of watery solutions in the preliminary cleansing of the skin. Ether is most useful for this purpose. After the skin is cleansed it is painted with tincture of iodine. The damaged edges are cut away and the wound itself is cleansed with a 1 in 40 solution of carbolic acid. Then, after changing gloves *et cetera*, the surgeon proceeds as in an ordinary operation, the whole area being surrounded with sterile towels. If necessary, the wound is freely opened, and if possible the fractured bones are replaced in alignment. Drainage is provided by means of stab wounds, and vaseline gauze is used instead of drainage tubes. Ordinary motor tire levers are very useful for replacing the bones; they are good levers and do not cause damage.

## Amputation.

Loss of the whole or portion of an upper limb is a much greater disability to the patient than a loss of the whole or part of a lower limb. Make every effort to save the hand and fingers.

[1] A post-graduate lecture delivered during the general revision course controlled by the New South Wales Permanent Post-Graduate Committee in Medicine in May, 1936.

In the lower limb the stump below the knee is the best. Such a stump should contain at least 7·5 centimetres (three inches) and at most the upper half of the tibia. An artificial limb cannot be fitted if the stump is shorter, and a longer stump offers no advantages to the maker of artificial limbs; also, it is often a source of trouble to the patient, owing to poor circulation.

Do not close the wound too much; interrupted sutures are the best. There should be no tension on the tissues and drainage should be free. Bismuth-iodoform-paraffin paste or "Vaseline" may be used. Gas gangrene must be always watched for and tetanus and gas gangrene antisera given as a routine measure.

#### Fractures of the Base of the Skull.

As far as my experience goes, in fractures of the base of the skull each case differs from every other, and no definite rule can be laid down applicable to all cases. As a general rule the less interference the better. Patients are more comfortable if the head is placed on a low pillow instead of flat on the bed, as is the usual custom.

I do not like routine lumbar puncture. At times the patient's condition is not improved by it, and sometimes death follows rapidly after the withdrawal of cerebro-spinal fluid. In the stage of convalescence lumbar puncture may relieve headache, which is often most distressing.

Do not syringe the ears; clean them thoroughly and lightly pack with antiseptic gauze.

Depressed fractures of the skull should be elevated without undue delay. If in doubt as to the presence or not of a fracture do not hesitate to turn back a flap and explore.

Hæmatoma of the scalp seen a few days after the injury may closely resemble a depressed fracture; but the application of a few fomentations will soon settle the diagnosis.

### A Brief Consideration of Various Diseases and Injuries.

We may now consider the treatment of certain injuries briefly.

#### *Injuries and Diseases of the Face.*

*Injury to the Eye.*—Do not bandage tightly. A hanging pad is best, loosely bandaged so that any discharge may escape.

*Fractured Malar Bone.*—Elevate by inserting a small elevator or blunt dissector through a small transverse incision in the cheek.

*Furuncles.*—Furuncles of the cheek, nose or lips may result in thrombosis of the cavernous sinus. Use hot fomentations rather than incision.

*Fractured Jaws.*—A fracture of the jaw is best treated by wiring the teeth together, if this is practicable.

*Fractured Nasal Bones.*—Try to replace the fractured bones as soon as possible. A pair of Howard Kelly forceps inserted into the nose is useful to elevate the depressed nasal bones.

*Flesh Wounds of the Face.*—Facial wounds heal well and flaps can often be successfully replaced. In a lift accident the soft tissues from the forehead to the neck on one side were stripped down. The wounds healed well when the flaps were sutured into position. Drainage is essential.

#### *The Neck.*

*Penetrating Wounds of the Neck.*—Make into open wounds and thereby prevent deep abscess formation and secondary hæmorrhage.

*Cut Throat.*—The differentiation of the various layers before any attempt at suture is important. Interrupted sutures are the best and free drainage must be provided.

*Abscess of the Neck.*—Use the Hilton method of opening an abscess of the neck and avoid general anæsthesia if possible. Free opening is best so as to avoid the use of rubber drainage tubes and the danger of secondary hæmorrhage. Remember, a suppurating congenital cyst is easily mistaken for an ordinary abscess in the neck.

*Stone in Wharton's Duct.*—A stone in the duct of the submaxillary gland is best removed under general anæsthesia.

#### *Chest.*

*Fractured Ribs.*—Strapping should be adequate. A suitable posture is helpful; the patient finds it easier to breathe if propped up in bed.

*Surgical Emphysema.*—Except in extreme cases, surgical emphysema does not cause much anxiety.

*Abscess of Axilla.*—Remember the possibility of traumatic aneurysm. Open abscesses of the axilla in a line with the main vessels. Be most careful to provide drainage and prevent secondary infection. Always treat any infection in the axilla seriously.

#### *Hands.*

Be very conservative and do not amputate fingers unless forced to do so. Suture cut tendons and nerves without delay and enlarge wounds to provide free exposure if necessary. Use a tourniquet when opening abscesses of the finger and hand.

As a rule general anæsthesia is needed for the removal of a needle from the hand or elsewhere; local anæsthesia is not suitable.

Do not leave a tourniquet on too long.

#### *Abdominal Injuries.*

*Stabbing and Bullet Wounds.*—A careful history is important. If there is any doubt as to whether the weapon or missile has pierced the abdominal wall, abdominal section should be performed. The determination of the presence or absence of intra-abdominal injury is often one of great difficulty. A decision must be made without undue delay. Is the patient suffering from severe shock or hæmorrhage or both? Has the patient a ruptured viscus? The general condition has to be carefully noted: the posture adopted by the patient, the pulse rate and temperature. Note whether there is any abdominal rigidity or whether abdominal liver dulness is present or absent. Note whether there is any dulness in the flanks; find whether the condition of the

patient has changed in any way; note whether the breathing is embarrassed; find out when the patient had his last meal, when he last passed urine and whether his bladder was full or empty at the time of the accident. Ask whether the patient had a hernia before the accident and note whether a hernia is now present. If a diagnosis of ruptured viscus is made, ask yourself whether immediate operation should be performed.

The success or otherwise of an immediate operation will depend on: (i) the facilities available, so that when an operation is undertaken no delay will occur; (ii) the systolic blood pressure, which should be at least 90 millimetres of mercury; (iii) the type of anæsthesia (gas and oxygen anæsthesia greatly diminishes the risk). Blood transfusion may make an operation possible.

*Stomach and Duodenum.*—If a ruptured ulcer is present cover the perforation with omentum if you cannot suture it.

*Liver.*—It is doubtful if operation will benefit the patient in many cases of ruptured liver.

*Kidney.*—Immediate operation is seldom required for injuries of the kidney; in fact it is seldom necessary to operate at all.

*Bladder.*—Rupture of the bladder or urethra requires operation as soon as possible. Over-distention of the bladder should be relieved by slow catheterization or puncture of the bladder suprapubically with a small needle. A hypodermic needle placed in the open end of a rubber catheter allows the urine to run away very slowly.

*Ruptured Ectopic Gestation.*—Give a hypodermic injection of morphine as soon as the diagnosis of ruptured ectopic gestation is made. The pulse improves as soon as the bleeding is stopped at operation.

Finally, it should be remembered that extreme violence is often exerted in motor accidents as in railway and tram accidents. The skin is often over-stretched, and although it may look viable it is thoroughly devitalized.

Wounds of the buttock of a penetrating nature are apt to be followed by secondary hæmorrhage. This can be avoided by making them open wounds when first seen.

## MANIPULATIVE SURGERY.

By W. KENT HUGHES,
*Melbourne.*

NOTHING less than the Great War awakened English people to the advantages of orthopædic surgery, and Sir Robert Jones would have died almost unknown to London if the late King Manuel of Portugal had not instituted the hospital at Shepherd's Bush.

Robert Jones was a wonderful manipulative surgeon, and continually urged upon the medical profession that bone-setters and osteopaths flourished only because we neglected to do our duty towards our patients.

When movement of an injured limb causes pain or effusion it is quite natural for the medical attendant to order rest; and it seems that it will be many years before we can make the profession realize that resting a limb for minor injuries is altogether wrong, and that when adhesions are allowed to form, stretching by gentle methods entails much suffering and invalidism.

Injuries to muscles, ligaments and joint capsules by tears and bumps form the major portion of cases calling for manipulation. The orthodox treatment consists of liniments, rest and mud. Rest is wicked, liniments are useless, and warm clay is just slightly soothing.

When a muscle and its sheath, or both, are ruptured, they must be kept on the move. If they are rested and a large scar is formed, they are put out of action for a long time and may be permanently damaged if the break occurs anywhere but near one of their insertions; for tearing occurs again and again on the slightest provocation. Light superficial massage and diathermy should be instituted at once and applied for half an hour twice a day at least. Manipulation movement should be used at the onset. By manipulation I mean movement of all the joints upon which the muscle acts. By these means the extravasated blood and exudate are quickly absorbed and months of invalidism are avoided.

The treatment of a broken bone and treatment of a broken muscle are diametrically opposite.

Rupture of the *erector spinæ* in the lumbar region is a very common occurrence amongst tramway employees, especially gripmen and track repairers. When treated by rest *et cetera*, men are disabled for anything up to five or six months, whereas by active treatment they would be back at work in a week or so. In manipulating a case of this kind, extend, flex and rotate the spine, and also flex and extend the thigh and rock the pelvis from side to side. Movements may be painful at first; but persevere and encourage the patient to do so. Occasionally it may be necessary to use an anæsthetic, local or general. If the patient strongly resists manipulation it is unwise to persevere without an anæsthetic, or the forced movement may cause rupture of other fibres; but, like the osteopath and bone-setter, you can often catch a man off his guard. If an anæsthetic is refused, this is the only means at your disposal, and you must take full advantage of your first attempt, for you may not have the chance for another.

After a little practice it is quite easy to detect the amount and position of the damage to the muscle and its sheath by gentle pressure of the finger-tips. In the lumbar region the tear may be fairly extensive, and may involve some of the spinal ligaments; so active and strong manipulation is more necessary in this region than in any other. Once you can persuade your patient to sit up, half the battle is won.

The case of J.C.H., a university athlete, is of interest as regards active treatment. On May 17, at the finish of

the 220 yards championship, he ruptured the biceps in the middle of the left thigh, and there was a rent in the muscle large enough to receive the tip of one's finger. He was given massage and diathermy within half an hour of the accident. This was followed by active treatment twice daily on the four following days. He then left for Sydney, and on May 24, less than a week after the rupture of his biceps, he won the 100 and 220 yards inter-university championships at Sydney.

Rupture of the plantaris, or more often of some fibres of the gastrocnemius and the soleus, or of both, frequently occurs in athletes or tennis players, especially in those of mature age; and when the limb is put up in plaster, as is generally the case, the injury means weeks, if not months, of invalidism. I have known of a patient who was incapacitated for six months; treated actively, most of these patients would be normal in a week.

P.C., an athlete, aged thirty years, tore some fibres near the commencement of the *tendo Achillis*, and for two days limped about only with the utmost difficulty. Active treatment was then instituted, with a normal result in five days.

Strapping across the torn muscle is occasionally advised, and this is one degree worse than rest. It makes recovery much more difficult, as the torn sheath becomes adherent to the deeper part of the muscle.

### Injuries to Joints.

I had not realized until four years ago how disabling minor injuries to joints, such as knocks and bumps, could be. My experience with athletes and footballers was of injuries of a more severe type. Tramway employees, both in traffic and on the track, are constantly being disabled from bumps on knees and shoulders. Only occasionally is the initial injury more severe, such as a displaced semilunar cartilage or a mild Pott's fracture.

Why slight adhesions about the knee joint or shoulder should cause so much pain and disablement is hard to understand. The usual treatment by rest and lotions entails months of unemployment for men who, with very few exceptions, are anxious to get on with their job, and who should be back at work in a week or ten days instead of being incapacitated for from two to five months. Injured ligaments and bursæ must be kept on the move, just as must injured muscles and their sheaths. Allow consolidation to take place and adhesions to form, and then incalculable damage is done. Intrapatellar adhesions are easily missed and are very painful and disabling.

Whenever I get a chance, which is not often, I institute movement and diathermy from the first. If movement is painful, a local anæsthetic is often very helpful. Except with a broken bone or displaced semilunar cartilage, I avoid rest as much as possible.

When a patient with synovitis of knee or ankle is first seen, apply a firm bandage and make the patient use the limb.

If the patient is seen before effusion takes place, a firmly applied "Elastoplast" bandage should be used for a few days; but this seldom occurs.

As regards displacement of the semilunar cartilage, I often wonder if expectant treatment is ever satisfactory for men who have to earn their living on their legs. I have seen so many return displacements.

In breaking down adhesions, Robert Jones's method of a strong, quick movement and immediate use of the limb should be carried out. To this I would add immediate application of diathermy for half an hour, and frequently repeated.

With infrapatellar injuries, where adhesions are often multiple, one movement is not sufficient; the patella must be moved in every direction and the bursa well kneaded. In any injury to the lower limb it may be necessary for crutches to be used until the patient can bear sufficient weight to do without them. The pain may generally be abolished by local anæsthetics, but by no means always.

Manipulation of the knee, other than extension and flexion, is not easy for a tiro. If access cannot be obtained to the works of Malin or Timbrell Fisher, fix the femur firmly and attempt to rotate the tibia on the condyles after having obtained full flexion of the leg and complete freedom of the patella.

Shoulders, like knees, are a harvest for the bone-setter. A little calcification warns the surgeon off movement; the bone-setter, knowing nothing about *myositis ossificans*, breaks down adhesions and often scores off his more learned brother. If I find some evidence of *myositis ossificans*, I use diathermy before and after manipulation, and I have not had any trouble. Where the *myositis ossificans* in an injured muscle occurs in conjunction with a bruised and torn periosteum, it is of more serious import and requires rest and diathermy, not movement.

Injuries to shoulders include bruising and tear of muscles and bursitis in connexion with the supraspinatus and deltoid muscles, as well as tearing of the capsule of the joints. Bursitis, especially in connexion with the supraspinatus, is often of the most troublesome character, and not infrequently requires an incision. A good description of injuries to the shoulders appears in *Annals of Surgery*, Volume I, 1937.

Medical practitioners not only resent the suggestion of manipulation, but not infrequently forbid the patient to undergo it, "as exudation is sure to follow and the disability will be made worse". So the osteopath and the bone-setter are so busy that people have to wait days to make an appointment, and all because the profession will not recognize the necessity for manipulating adhesions and for maintaining the flexibility of the spinal column.

With all the adventitious and meretricious aids to diagnosis, medical men seem to have lost the use of their fingers. Not one in a hundred will attempt to find the thickening of the muscle or ligament by exercising gentle pressure over the painful area.

A lady hobbled in to see me on two crutches, with a diagnosis of osteoarthritis; she had been given a hopeless prognosis. The history was that two months previously

ILLUSTRATIONS TO THE ARTICLE BY DR. HERBERT H. SCHLINK AND DR. CLEMENT L. CHAPMAN.

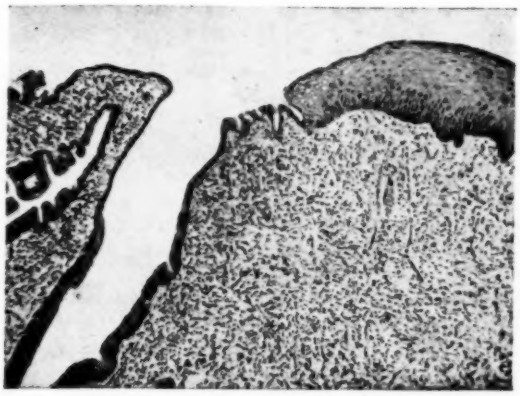

FIGURE I.

Shows the normal, very well defined transition from the squamous epithelium of *portio vaginalis cervicis* to the columnar epithelium of the cervical canal. The so-called transitional zone.

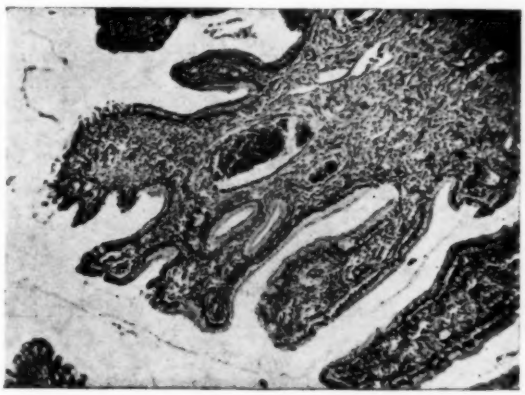

FIGURE II.

Papillary erosion. Columnar-celled epithelium has grown down in papillæ and "eroded" the squamous-celled covering.

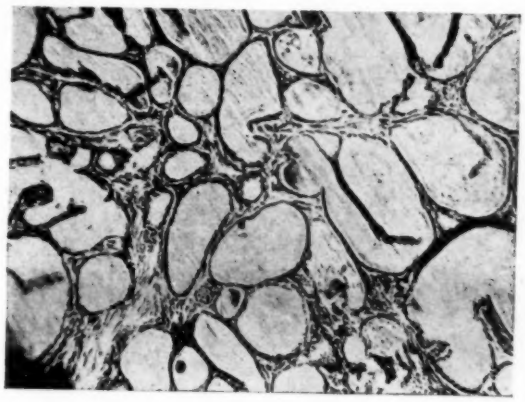

FIGURE III.

Follicular erosion. Cervical glands have become cystic (ovule of Naboth); ducts have become scarred over and occluded.

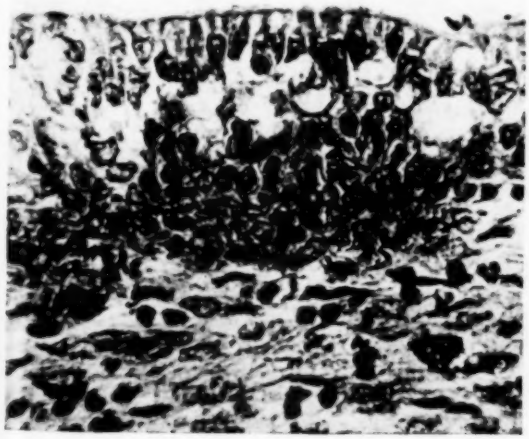

FIGURE IV.

Early metaplasia, showing columnar-celled lining, with nuclei at different levels; mass of undifferentiated cells underneath. (× 400.)

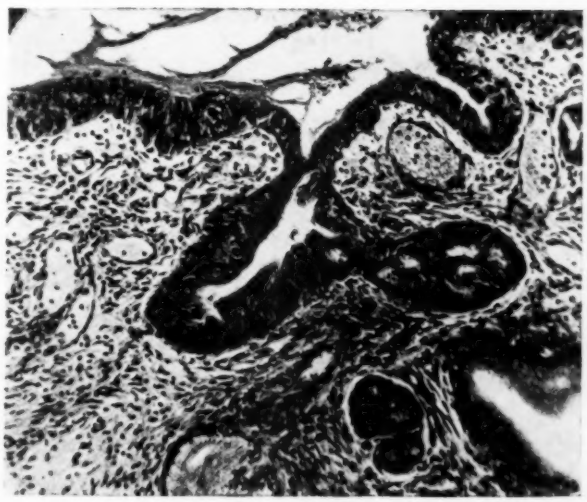

FIGURE V.

Early metaplasia in a gland. Note the lace-like appearance. (× 250.)

## ILLUSTRATIONS TO THE ARTICLE BY DR. HERBERT H. SCHLINK AND DR. CLEMENT L. CHAPMAN.

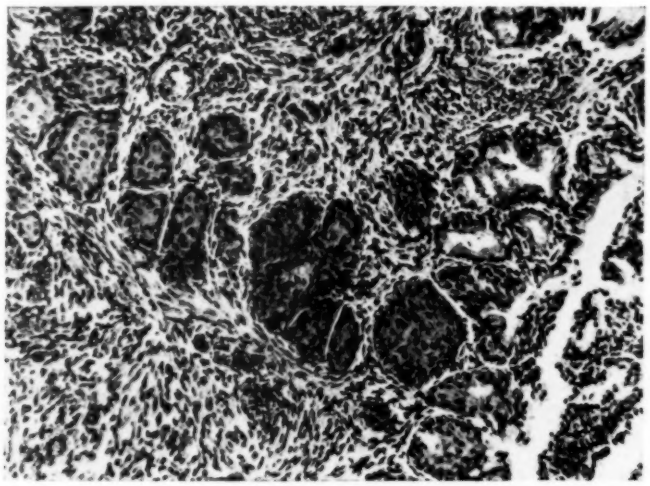

FIGURE VI.
Deep advanced metaplasia, with early cellular changes towards malignancy. (×250.)

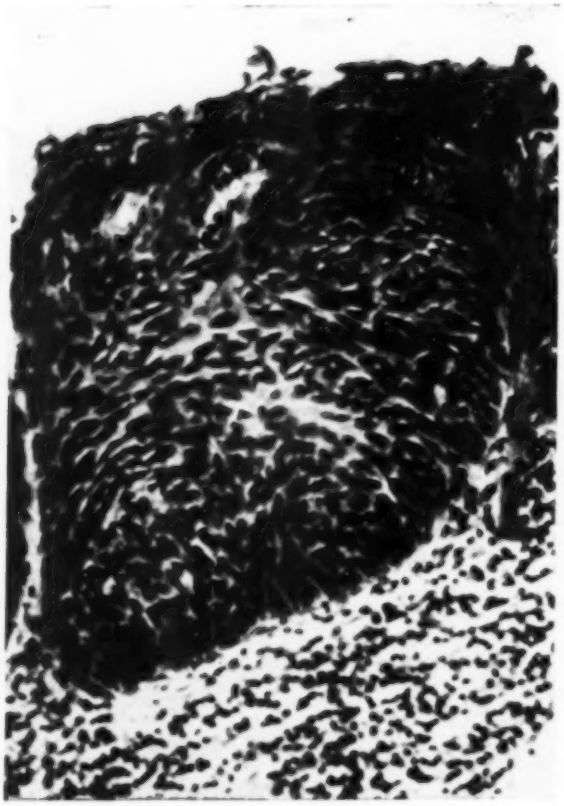

FIGURE VII.
Carcinoma *in situ*. Malignant cellular changes, but no invasion. (×400.)

FIGURE VIII.
Early carcinoma. Malignant cellular changes are pronounced. Invasion shown at 4 o'clock. (×175.)

ILLUSTRATIONS TO THE ARTICLE BY DR. HERBERT H. SCHLINK AND DR. CLEMENT L. CHAPMAN.

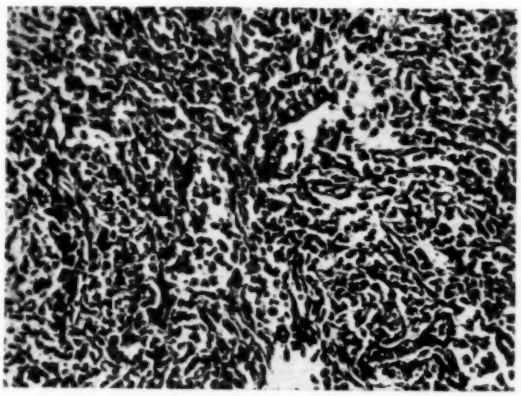

FIGURE IX.

Anaplastic carcinoma of cervix, very cellular, no cell grouping, little fibrous stroma. The so-called unripe type of squamous carcinoma.

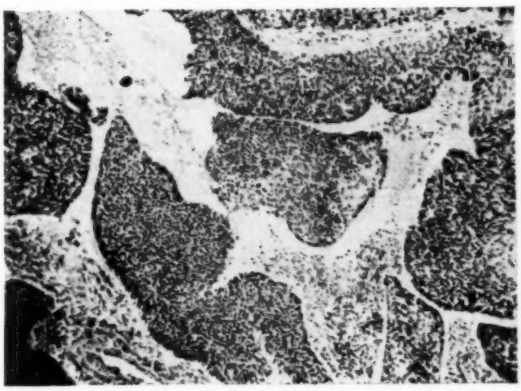

FIGURE X.

Transitional-celled carcinoma of cervix, cells grouped into definite masses, well-marked stroma, no keratin formation. The so-called mid-ripe type of squamous carcinoma.

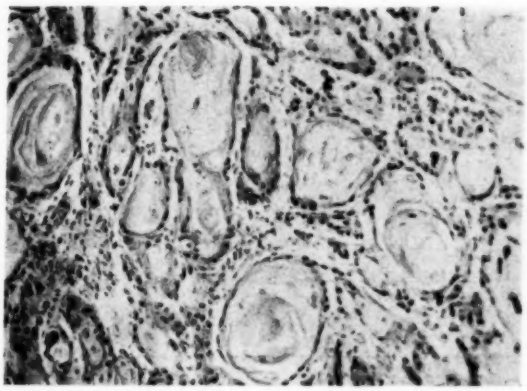

FIGURE XI.

Squamous-celled carcinoma of cervix, well-defined cell masses with keratin in centre, stroma well marked. The so-called ripe type of squamous carcinoma.

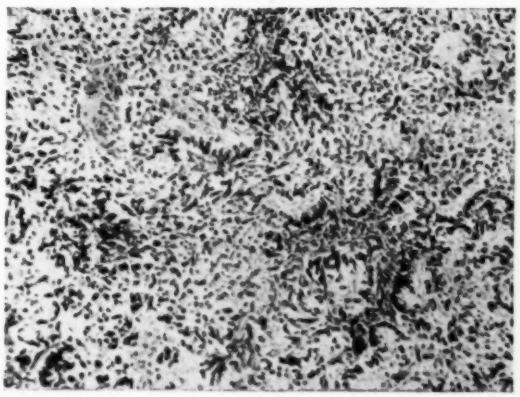

FIGURE XII.

Adenocarcinoma of cervix. Columnar cells arranged in alveoli.

## ILLUSTRATIONS TO THE ARTICLE BY DR. RICHARD FLYNN.

FIGURE I.

Pre-operative excretion pyelogram, showing the size of the dilated pelvis of the kidney and the club-shaped dilatation of the calyces.

FIGURE II.

Pre-operative retrograde pyelogram, showing dilatation of the renal pelvis much more extensive than would be thought from Figure I.

FIGURE III.

Post-operative excretion pyelogram, showing marked diminution in size of the renal pelvis. The pyelogram as a whole looks too good to be true.

FIGURE IV.

Post-operative retrograde pyelogram, showing that some dilatation of the renal pelvis and calyces is still present. It also shows well the dependent origin of the ureter. The emptying time after the pyelogram was a little delayed.

when she was rising from a chair, something gave way near her knee and she had been unable to walk since that date. A similar amount of osteoarthritis was present in her other knee. There was an area of thickening just above and to the outer side of the patella. When this was manipulated the function of the limb was completely restored.

## THE CONTACT LENS.

By J. D. MAUDE, M.B., Ch.M., D.O.M.S., D.O.,
*Sydney.*

DURING the last hundred years various attempts have been made to make a successful contact lens, that is, a lens which can be put under the lids in the conjunctival sac in contact with the eye. The blown and standardized ground glasses were never successful, because they set up irritation and disturbed capillary circulation. About one in thirty of these is efficacious. For purposes of discussion the terms "contact lens" and "contact glass" can be considered synonymous. The glass shell in contact with the eye carries the lens correction on the glass cornea.

Dr. Josef Dallos, working in Budapest and later in London, found that the secret of success of the contact lens lay in the perfection of its fitting. His glass embraces the greater part of the conjunctival surface of the globe with such evenness that there is no disturbance of the circulation nor any irritation, and a capillary layer of saline solution lies between the glass and the cornea. The glass moves intimately with the eye, and full perimetric range of vision is obtained; if it is rotated or displaced it immediately moves again into the correct position. The "comfort time" in the case of the Dallos glass increases with wearing, up to twelve hours a day, whereas in the case of other contact glasses the "comfort time" decreases, so that the lens cannot be worn for more than a few minutes at a time.

It is well to explain about the Dallos contact lens, as it concerns patients in this city. Increasing attention is being paid to this optical novelty by the public, and publicity in the lay Press has brought many inquiries.

Until a technician can be brought to Sydney, delay and expense must limit the demand. The Contact Lens Centre, in Cavendish Square, London, is willing to train a technician if guarantees are given. The technician will be skilled in the manufacture of the trial shells and the grinding of the lens corrections on the final glass. This will make it possible to supply the glasses in one to three weeks, whereas at present, even if air mail is used, it may take from three to six months or even nine months before the final glasses can be supplied from London. It is hoped that a centre will be set up in Sydney where the work of fitting and manufacture can be carried out and special arrangements will be made to supply the glass at cost price to public hospital patients.

Patients suitable for contact glasses are those suffering from conical cornea, high myopia, gross astigmatism and high hypermetropia. Patients who have suffered from recurrent ulceration associated with keratitis from mustard-gas poisoning have been

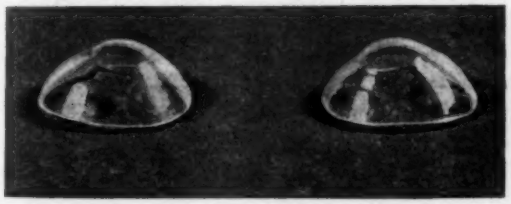

FIGURE I.
A pair of contact lenses.

treated with success. This list can be extended to include special cases of anisometropia and aphakia. Astigmatism from defects in the lens is excluded from this list.

FIGURE II.
The eyes before the application of lenses.

The cosmetic effect of the contact lens creates a demand amongst people who are anxious to avoid using spectacles. It is also stated by some that the eye gains a slight apparent increase in size and an attractive lustre.

FIGURE III.
The eyes after the application of lenses.

In occupations and sports where spectacles are a danger or an embarrassment, the use of contact lenses has a wide field. The writer would like to point out that in times of great demand for increase in the personnel of the various services, especially the air force, a new source can be tapped. Those who are fit in all other respects but are rejected because, owing to astigmatism or myopia, they cannot satisfy exacting ocular requirements and would have to wear spectacles in performing their

duties, can now be brought into the special services. No doubt governments will pay attention to this important feature of the contact lens.

The question of injury to the eye from breaking of the contact lens has often been brought forward. It is found that the glass acts as a protection, in that any blow would be distributed over the surface of the eye and not concentrated to cause damage at

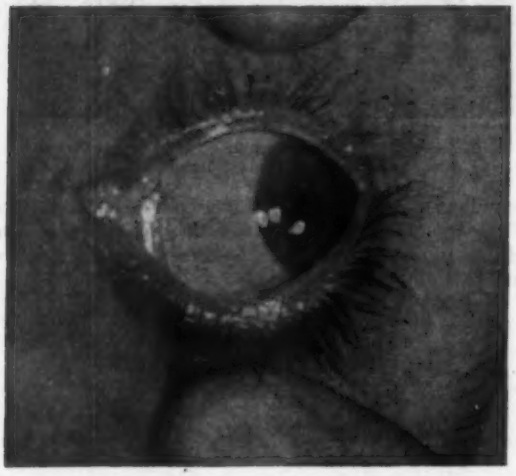

FIGURE IV.
Right eye turned outwards to show inner edge of lens.

the point of contact. Owing to the fact that the glass is in contact with soft tissues, these qualities are reinforced, because the glass is able to give way before an applied force. The glass is tough and not easily splintered or broken.

FIGURE V.
Left eye turned inwards to show outer edge of lens.

The processes before a contact lens is completed are as follows:

Under local anæsthesia with 5% cocaine solution a negative cast is taken of the eye with a special preparation called "Negacoll". The writer has found it more satisfactory to avoid distortion by blocking the facial nerves on both sides with "Novocain" solution. A wax positive cast is then made from the "Negacoll", followed by positive and negative plaster casts. These are reproduced in metal and a trial glass shell is made. The trial shell is made for the purpose of fitting by grinding, the results being tried on the patient's eyes, which have been cocainized. All this work must be carried out by the ophthalmologist. Grinding causes the glass to become thin, and difficulty is experienced in proceeding further. A second trial shell is then made from the first, and this process may have to be repeated perhaps several times before perfection in fit is reached. The final glass is made with the necessary correction ground on the glass cornea. The metal cast from which the final glass is made is stored away and records are filed. A new pair of contact glasses can be made within a short time in the event of loss or damage. These are replicas of those which they replace, so that no discomfort is likely to be experienced when they are worn.

The patient is taught the method of insertion. The glass is inserted under the lids by the patient, without the use of local anæsthetic. The patient is instructed to increase the daily time of wearing the glass from one hour up to six hours a day. Usually at the end of three weeks no discomfort is experienced. During this time the patient must avoid bright light and smoke, and must be careful not to squeeze or rub the eyes. A well-fitted denture takes about the same time to become comfortable in the mouth. Tinted glass corneæ are more suitable for Australian conditions.

It must be pointed out that the rapidity with which the glasses are accepted is in proportion to the gain in sight. A patient suffering from high myopia or conical cornea with an improvement in visual acuity up to $^{6}/_{6}$ or $^{6}/_{9}$ from $^{6}/_{60}$ or less is a more satisfactory, more apt wearer than one who seeks the cosmetic effect for a small correction.

## X RAY THERAPY IN SINUSITIS.

By HUGH MITCHELL, M.B., D.L.O., F.R.C.S.,
*Honorary Aural Surgeon, Victorian Eye and Ear Hospital, Melbourne.*

FOR many years it has been observed by the writer that X rays used in the diagnosis of acute sinusitis have often appeared to diminish the suppuration, even when the radiograph has revealed a most extensive inflammatory condition. This effect has also been observed by others, and various attempts have been made to find the optimum dosage.

In dealing with infections and inflammations generally, W. F. Manges and R. M. Smith (*American Journal of Roentgenology*, November, 1937) have searched the literature and come to the following conclusions. They are briefly as follows:

1. The optimum dose for inflammatory foci is 20% to 30% of a skin erythema dose for humans. In the earliest stage higher doses are required, whereas in the healing stage weak doses only are needed, intensive radiation during the regenerative stage being detrimental.

2. Irradiation produces an increase in destruction of leucocytes and increase of phagocytosis and of the histiocytic reaction. These correspond to the clinical course whereby the inflammatory focus

becomes smaller and the recovery period considerably shortened. Very high doses cause a break in defence barriers and spread inflammation.

3. Irradiation calls forth non-specific antibodies in the blood.

4. Röntgen rays influence colloids, so that there are a lowering of osmotic pressure, a lessening of exudation of wandering cells, and a conversion of surface tension.

5. Amino-acids and trypsin in inflammatory foci are increased and there is also an increase in total protein.

6. There was no evidence of direct irradiation effects on the blood vessels in experiments on the rabbit's ear.

7. The relief of pain results from the action of stored protein, split products and lipoids on the nerve endings, the lessening of tension and œdema, the transforming of tissue juices obtained from colloids, and solution of the crystalloids.

Previous to this article the writer had treated several patients with chronic inflammation of the antra by giving a dose of one-sixth of a Sabouraud *B* dose to each antral region each week for three doses. It was felt that if the total was no more than half of a Sabouraud *B* dose no harm could come of it, although the irradiation caused by the taking of the skiagrams had the effect of adding somewhat to the total dosage.

The method used was as follows:

In the first place a routine set of two skiagrams of the antra and frontal sinuses was taken, to be used as a check afterwards. Then this was followed by the giving of one-sixth of a Sabouraud *B* dose to each antral area, the eye and the rest of the face being shielded with lead. A current of 80 kilovolts (peak) was used, and filtered through 0·5 millimetre of aluminium.

The first two patients were men of education, one an architect and one a leader in the business world, so that their comments are worthy of note. It is also interesting that their remarks were almost alike.

E.G., aged forty-two years, was the first to be treated. He had had a typical history of a chronic sinusitis with a gross condition of crusting and discharge, especially from the left side of his nose. On April 23, 1936, he had his first treatment. Seven days later he reported that his nose was more comfortable; the mucous discharge had been more liquid for a few days, but now there was no discharge down the back of the throat and his throat was not so dry. The second treatment was given, and after another week he stated that the crusts were not so troublesome and that the discharge through the anterior nares was lessening. He was given his third treatment, and four weeks later another skiagram was taken. While there was no visible change in the X ray appearances, he felt well, and he still does, two years later.

P.M., aged forty-eight years, had had treatment for two years, including six antrum washouts, and his condition was of such long standing that they were not of much help. He had had vaccines and many other forms of treatment, all with a view to avoiding the radical operation, which appeared to be really necessary. Seven days after his first X ray treatment he stated that he was feeling much better, that he had had an increase in the nasal discharge and sneezing for the first three days; but this had now ceased. He had a smell of burnt material in his nose for a few days; but this had now gone, and his sense of smell, which had been previously impaired, had improved. He was given treatment on two more occasions, and he said he felt well. One month afterwards another skiagram was taken, and, as in the first case, it showed no alteration from that taken before the irradiation, although subjectively the patient was well. Six months later he is still well and very much improved in general health.

It would appear that the main use of this type of treatment should be in the acute cases, but as they generally respond so well to repeated antral lavage, it has not been employed in these cases so far, the writer considering that a new treatment should be tried only where a proved successful treatment has been refused. When it has been used in a series of acute cases the results will be reported.

The nearest approach to an acute case was that of a little girl, A.F., aged four years, the daughter of a medical man and medical woman. She had had a discharge from the right nostril and a cough for three months. Three months previously X ray examination had revealed no disease of the sinuses. We know, therefore, that the condition was not of longer standing than that. She received similar X ray treatment on three occasions, and also had her tonsils and adenoids removed. Her improvement was equally dramatic, and now, nearly two years after treatment, she is fit and well.

This article is written to draw attention to what appears to be an additional very useful weapon in our equipment, rather than to advocate a change in our present methods of treatment. There is no doubt that it is a very useful method, that it is painless in its application, and, if the suggested doses are given, it has an effect of a favourable nature and cannot possibly be harmful.

## BLOOD URIC ACID ESTIMATION IN ECLAMPSIA.

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THE ætiology of the toxæmias of pregnancy is still in doubt, as indeed is also the true pathology. The view that the kidney is primarily or solely the only affected organ is no longer tenable. It is true that there is renal damage, as indicated by the presence of albumin, casts and, at times, red blood cells in the urine; but this is not sufficient to produce disturbances in urea excretory function until very late in the disease. It has not yet been definitely established whether the vascular disturbances, the hypertension, the œdema, the retinal changes and convulsions, are due primarily to the same ætiological factor involving the kidneys, or whether they are secondary to the renal damage. Again, in acute nephritis many people are of the opinion that the basis of the disease is a toxic or an anaphylactic response, which causes widespread capillary damage, leading to œdema, retinal changes and hypertension. The glomerular and tubular vessels of the kidneys are damaged in common with

those elsewhere, resulting in the albuminuria, hæmaturia and formation of urinary casts. A similar disturbance may be operating in the toxæmias of pregnancy. The liver also is affected, a toxic necrosis of cells occurring, demonstrable histologically, which may lead to a condition of acute yellow atrophy. It is on this damage to the liver that the following discussion is based.

Stander and Cadden[1] published the results of the blood chemistry in 108 cases of eclampsia and 40 cases of preeclampsia. They group these together, as they consider the former to be but a more severe stage of the latter. Analyses were made in these cases in all stages of the disease, and in no single instance did they find deficient kidney function as judged by the urea concentration test, the phenolphthalein excretion test or the urea clearance test. In no case was the blood urea or non-protein nitrogen content raised above normal. Most of these patients had albumin or hyaline casts in the urine, indicating that the kidneys had not escaped some involvement. There was one constituent of the blood which varied greatly in quantity, namely, uric acid. This progressively increased before delivery to values far above the normal, and decreased after delivery to the usual figure.

The metabolism of uric acid is briefly as follows.[2] It is derived both exogenously and endogenously. Exogenously it is formed from the food nucleoproteins, which are digested through various stages to the purine derivatives guanine and adenine, in which form they are absorbed from the alimentary canal. In the tissues and liver, the exact site being unknown, these are deaminized and then oxidized to hypoxanthin, a monoxypurine, and xanthin, a dioxypurine, and finally uric acid, a trioxypurine. Endogenously uric acid is formed from the waste tissue nucleoproteins in the same manner.

Mann[3] has shown that the dog excretes only 30% of uric acid formed, the remainder being oxidized a stage further to allantoin, which process is arrested by hepatectomy. It has recently been shown also that only 30% to 70% of ingested uric acid is excreted by the human being, the remainder forming some as yet unknown compound, which is not allantoin.[4][5] This was proved by the intravenous injection of measured amounts of uric acid into a fasting subject, the amount of uric acid excreted in the urine then being estimated, as compared with that excreted during fasting. This showed that 30% to 70% of the injected uric acid was not excreted, nor was there a compensatory increase of blood uric acid, indicating that it must have been metabolized somewhere in the body.

The view that the liver is the site of uric acid metabolism is supported by the increase of uric acid in the blood in eclampsia, in which the liver is certainly affected, and also by a case in which the patient suffered from anuria for nine days following poisoning by bichloride of mercury.[6] At autopsy only 10·0 milligrammes of uric acid were found per 100 grammes of viscera—1·0 milligramme in the liver, 2·4 milligrammes in the blood, and the remainder in other viscera, whereas the uric acid should have been increasing at the rate of 70 milligrammes (the normal amount excreted by a fasting person) per day from endogenous sources. Thus it must have been very rapidly metabolized, and the low concentration in the liver suggests that this was the site of the change.

In nephritis the blood urea content invariably rises before the uric acid content.[7] The latter becomes raised only in the terminal phases of the disease. This is contrary to an older view. In eclampsia, on the other hand, the blood uric acid content is raised before the blood urea content, so that obviously the kidney has nothing to do with the increase in the uric acid. It has also been shown that eclamptics excrete normal amounts of uric acid.[8]

In other cases of liver disease in man the blood uric acid has been shown to increase; for example, in a fatal case of chloroform poisoning reported by Stander[9] and in cases of cholecystitis reported by Feinblatte.[10] It would thus appear that the liver is the important seat of uric acid metabolism and that disease of the liver will interfere with this function.

In eclampsia, Stander and Cadden[1] have shown that the increase in blood uric acid varies according to the severity of the disease; in some of their cases the figure rose to as high as 14·0 milligrammes per 100 cubic centimetres.

This brings us to a consideration of the normal fasting blood uric acid content, which appears to vary from 0·7 to 4·0 milligrammes per 100 cubic centimetres, according to the authors consulted.[1][2] In the case of 50 non-pregnant women attending the out-patient department of the Newcastle Hospital we have found the lowest figure to be 1·0 and the highest 3·7, the average being 2·2 milligrammes per 100 cubic centimetres. Estimations were then performed on ten normal pregnant women at full term, from the antenatal clinic of this hospital, and these revealed an average of 2·3 milligrammes per 100 cubic centimetres, so that normal pregnancy has apparently an almost negligible effect on the uric acid metabolism. The blood uric acid content of ten women at varying stages of gestation did not depart from these figures.

A marked difference is noted when we come to deal with the eclampsias. Stander and Cadden's[1] average blood uric acid figure in preeclampsia before delivery was 4·6 milligrammes per 100 cubic centimetres. This fell to 3·6 milligrammes after delivery. In 100 patients suffering from eclampsia, before delivery, the average was 4·2 milligrammes; the figure rose to 6·5 during convulsions and fell to 3·5 after delivery.

We do not see much eclampsia at this hospital; but ten patients examined all conformed to Stander's observations. All had a raised blood uric acid content, with normal blood urea content and normal urea concentration tests. Two of these cases are chosen as typical of the ten. In all cases

unlaked blood filtrate was used for the purpose of these investigations, according to the method of Folin.[11][12]

CASE I.—The patient on admission to hospital had a systolic blood pressure of 230 and a diastolic pressure of 100 millimetres of mercury. She had had five convulsions. The blood uric acid content was 5·7 milligrammes per 100 cubic centimetres, rising to 6·1 milligrammes twenty-four hours later. The patient's condition improved a little, the systolic blood pressure falling to 170 millimetres of mercury and the blood uric acid decreasing to 4·0 milligrammes per 100 cubic centimetres. Labour was surgically induced and the child was born six days after the onset of fits. The uric acid content fell to 3·5 milligrammes per 100 cubic centimetres one week after delivery.

CASE II.—The patient was admitted with preeclampsia. The systolic blood pressure was 235 and the diastolic pressure 140 millimetres of mercury. She complained of severe headache and blurred vision. At the time of admission the blood uric acid content was 3·7 milligrammes per 100 cubic centimetres; it rose to 5·3 milligrammes twenty-four hours later, as her condition became worse. Drowsiness and vomiting occurred, and the blood pressure remained at a constantly high level. The child was born after labour had been surgically induced. The puerperium was uneventful. The blood uric acid content gradually fell to 2·8 milligrammes per 100 cubic centimetres in three weeks after delivery.

The remaining patients behaved in exactly the same way, their blood uric acid content rising before delivery and falling during the puerperium.

Stander[1] lays great stress on the importance of this test; but it is doubtful whether it reveals more than the clinician can elicit from physical examination and blood pressure estimation. In all Stander's cases the signs were obvious, namely, raised blood pressure, œdema, retinal changes *et cetera*. It was not as if the raised blood uric acid content showed up a latent eclampsia before it was clinically obvious. The blood uric acid increases not before, but *pari passu* with the increasing severity of the toxæmia. There may also be a delay in its fall after confinement, as in two of our cases, in which, although the blood pressure fell and the clinical condition of the patient improved, the blood uric acid content remained high for several days afterwards. In none of the ten patients examined did the blood uric acid remain above normal longer than three weeks after labour. However, these observations are interesting, inasmuch as they draw attention to the liver damage, and the blood uric acid content is the first shown to be affected by the toxæmias of pregnancy.

### Summary.

1. The ætiology of the eclampsias is still unknown.
2. The kidney is shown to be affected in common with other organs, but is not primarily or solely the affected organ.
3. The metabolism of uric acid is briefly discussed.
4. Attention is now focused on the liver as a centre of uric acid destruction.
5. The blood uric acid content is shown to rise in eclampsia, especially during the convulsions, and to fall in the puerperium, in contradistinction to the blood urea content, which shows no significant change.

### Acknowledgements.

I wish to express my thanks to Dr. W. J. R. and Dr. W. L. Nickson, honorary gynæcological surgeons to the Newcastle Hospital, for giving me access to their patients and allowing me to make this investigation.

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## FRACTURES OF THE SPINE, WITH SPECIAL REFERENCE TO LAMINECTOMY.

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THIS paper will not deal with a specific number of cases, but will merely contain some practical points and some rules on which to base treatment. First of all, I wish to point out that all rules are made to be broken, and that every case must be treated on its merits, with special reference to the clinical findings. I do hope, however, that what I have to say will clear up some of the doubtful points in the minds of some practitioners.

Classification of spinal fractures can be made from many aspects—anatomical, physiological, type of fracture, fractures peculiar to different regions of the spine, and so on. Here I shall classify them into two main groups: (i) fractures without nervous symptoms, (ii) fractures with associated nervous symptoms. Naturally nervous symptoms are commoner with fracture-dislocations than with simple crush fractures, but I shall not stress the type of fracture in this paper.

Fractures without nervous symptoms can be dismissed with the statement that they do not call for laminectomy. Appropriate reduction and immobilization for a sufficiently long period are all that is necessary.

Fractures with associated nervous symptoms can be divided into two main groups: (*a*) fractures in which the onset of nervous symptoms is early, and (*b*) fractures in which the onset of nervous symptoms is late.

In the first group the nervous symptoms are due to concussion, hæmatomyelia or direct damage to the cord by a dislocation of the vertebræ or severe angulation at the site of injury. With a simple crush fracture the symptoms in the majority of cases are due to concussion or hæmatomyelia; the patients with the worst deformity very rarely have paraplegia, and the same can be said about tuberculous caries of the spine.

With a fracture-dislocation of the spine, damage to the cord by impingement of bone is a far too real danger. This damage may be anything from complete transection to a mild contusion. Furthermore, it should be appreciated that, by the time an X ray photograph has been taken, there has been a considerable amount of recoil at the site of the dislocation; in other words, the deformity has been very much greater than that shown in the skiagram. To realize this is most important, because no alteration in the position of the fragments can have any effect on the paraplegia in the majority of cases. An attempt, however, should be made to reduce the deformity in the hope that thereby the nervous symptoms will be diminished. If the first adequate attempt at reduction of the deformity fails, do not be over-anxious to make a second; for a live patient with paraplegia and an unreduced fracture-dislocation is better than a dead one with a reduced or partially reduced deformity. In the cervical part of the spine conditions are very different from those in the rest of the spinal column; all dislocations and fracture-dislocations should be reduced, if possible, for the plane of the articular processes allows varying degrees of displacement with much less force than in the dorsal and lumbar regions, and consequently the cord does not suffer so much damage.

It may be as well to point out at this juncture that patients with paraplegia, particularly when it extends up to the umbilicus or further, do not tolerate a plaster jacket well; they readily get sores over the sacrum.

Of the nervous symptoms caused by concussion and hæmatomyelia, those due to concussion, like those due to bony injury, are immediate in onset, while those due to hæmatomyelia are somewhat slower in onset and take several hours to appear. In both instances the paraplegia generally clears up within a fortnight with recumbency, although some patients with hæmatomyelia do not improve for many months, if at all.

In the second group of fractures with associated nervous symptoms, those in which the onset of nervous symptoms is late, laminectomy is indicated. By late onset is meant onset several days after the injury. There is, however, another distinguishing feature about this type of case: the paraplegia is slowly progressive after its onset, and it does not clear up with rest. The causes of this type of paraplegia are: (*a*) *meningitis serosa circumscripta*, (*b*) callus and (*c*) extradural hæmatoma.

Admittedly, there are many difficulties; for example, one of the causes of the lesion in the second group may be superimposed on those of the lesion in the first. To distinguish between an extradural hæmatoma and hæmatomyelia may cause some difficulty; but as a general rule the former is not so early in its onset and is slowly progressive, whereas hæmatomyelia soon reaches its zenith, when the nervous symptoms appear.

There is a rare type of vertebral fracture in which the laminæ are driven onto the *dura mater* and its contents. In these cases operation is indicated for removal of the offending fragments.

No decision to operate should be made on the evidence of lumbar puncture alone. If the lumbar puncture shows the dynamics of the cerebro-spinal fluid to be normal and if paralysis is present, operation is obviously of no value; if, on the other hand, there is some disturbance of the dynamics and if the deformity has been reduced, operation may be considered necessary by some surgeons. The results are, however, invariably bad and the outcome may be fatal when the paralysis is early in onset.

#### Summary.

The only indication for laminectomy in fractures of the spine is slowly progressive paraplegia which does not clear up with rest. The nervous symptoms are due to *meningitis serosa circumscripta*, to callus or to an extradural hæmatoma. Paraplegia due to cord damage by bone is immediate in onset, as is that due to concussion; but the latter generally clears up within a fortnight with recumbency.

Paraplegia due to hæmatomyelia is slower in onset than that due to concussion, but not so slow as that due to *meningitis serosa circumscripta*, to callus or to extradural hæmatoma; it similarly clears up within a fortnight, if it is going to clear at all.

## AN ANALYSIS OF THE AUTOPSY FINDINGS IN TWO HUNDRED CASES OF PULMONARY TUBERCULOSIS.

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For many years the medical profession has been prone to consider tuberculous infection in the human as localized to pulmonary, renal or other specified sites, and, as Krause[1] states, "to think of generalized tuberculous infection only in the terms of its extreme clinical form, miliary tuberculosis". An emphatic refutation of such an attitude is produced by an analysis of the autopsy observations in patients who have been regarded as subjects of pulmonary tuberculosis. The frequency and widespread sites of further tuberculous foci in such subjects support the contention of Krause[1] that

"clinically, there is a not uncommon generalization of much more benign type". If this feature of tuberculous infections in the human were more generally appreciated it would profoundly affect our methods of therapy, which should aim at reducing the general effects of the infection, while at the same time assisting the mechanism of healing in localized lesions.

The figures in the present analysis were obtained in 200 consecutive autopsies on subjects of so-called pulmonary tuberculosis performed at the Austin Hospital in the three-year period 1935 to 1937. Careful macroscopic examination of the viscera was made, and in certain cases the identification of tuberculous foci was confirmed by microscopic study. As serial microscopic sections of solid viscera were not made, the stated incidence of tuberculous foci in such organs may be less than what it actually was, and comparison with other quoted tables supports this opinion.

In the intestine, careful examination of the alimentary canal was made; and the stated incidence of tuberculous infection in the intestine may be regarded as accurate. All subjects examined were those in which recognizable tuberculous infection in the lungs had been present for a period of at least six months prior to death; but in a large proportion the presence of further foci of infection was not appreciated until *post mortem* examination was made.

TABLE I.

| | Sites of Foci. | | | | |
|---|---|---|---|---|---|
| | Intestines. | Kidneys. | Spleen. | Liver. | Bones and Joints. |
| Number ..... | 95 | 66 | 5 | 15 | 13 |
| Incidence ..... | 47·5% | 33·0% | 2·5% | 7·5% | 6·5% |

Study of these figures reveals a fairly close similarity to those quoted in other countries. Jameson[2] estimated that in 35% of cases intestinal ulceration was present; Boyd[3] found tuberculous infection of the intestines in 50% to 80% of cases; while Brown and Sampson[4] found tuberculous intestinal ulceration in 29% to 80% of cases. The hypertrophic type of tuberculous intestine was regarded by Stewart[5] as uncommon, and in the present series only eight cases were encountered—4% of cases or 8% of the total number in which tuberculous infection was found. Brown and Sampson[6] further state that perforation of tuberculous intestinal ulcers is uncommon, but in eight cases, or 8% of those in which ulcers were present, perforation had occurred. The frequency of this complication in pulmonary tuberculosis is very important from the aspect of prognosis, and the diagnosis is extremely difficult. In this connexion Brown and Sampson emphasize the fact that few surgeons of experience will be prepared to perform laparotomy on patients affected by pulmonary tuberculosis until intestinal ulceration has been carefully excluded.

In 33% of cases there was macroscopic evidence of tuberculous infection in the kidneys. This figure differs widely from those of Jameson,[2] who found infection in 9%, and of Medlar,[7] who found 66% of subjects to have tuberculous foci in the kidneys. The latter figure was determined after examination of serial microscopic sections of the kidneys, and would therefore be expected to exceed those found by macroscopic examination alone. Such figures support the view of Addison[8] that renal tuberculosis is not uncommon in association with other active tuberculous foci. Medlar[7] and Helmholz consider that these figures indicate that tuberculous bacilluria is always a sign of tuberculous infection of the kidney—in other words, that the kidney is unable to excrete tubercle bacilli without itself being infected.

It is often stated that tuberculous bones and joints are uncommon in association with pulmonary tuberculosis. In the present series such infections were present in 6·5% of cases; but as the figures were obtained at a tuberculosis hospital it is probable that the general incidence is less than that found in this analysis.

TABLE II.
*The Incidence of Amyloid Disease.*

| Total Incidence. | Percentage Incidence. |
|---|---|
| 24 | 12% |

The incidence of amyloid disease in this series of cases corresponds fairly closely with that found by Jameson.[2] In the present series it was found only in those cases in which secondarily infected cavities of old standing or intestinal ulcers were present. This observation supports the opinion of Brown and Sampson.[4] Occasionally this complication, because of associated diarrhœa, may suggest the diagnosis of tuberculous ulceration of the intestine when such is not present.

TABLE III.
*Pulmonary Tuberculosis with Extrapulmonary Foci.*

| Total Incidence. | Percentage Incidence. |
|---|---|
| 136 | 68% |

It is apparent that in at least the terminal stages of pulmonary tuberculosis a large proportion of patients have secondary foci of tuberculous infec-

tion in viscera widely separated from the pulmonary lesions. Such foci may be situated in the intestines, the kidneys, the liver, the spleen, the suprarenal glands, and other organs of the body. It is therefore essential to observe the tuberculous patient very closely in order to determine the presence of such secondary foci, as they may adversely affect the course of the disease; and furthermore, in all cases of pulmonary tuberculosis an attempt should be made to prevent the development of such secondary foci, and where they have developed, to assist their healing. It appears that the latter ends may best be served by a rigid observance of two dicta: first, where possible, the infected lung must be rested by some method of relaxation therapy, the likelihood of the spread of infection thus being diminished; and secondly, in order to diminish further the spread of foci and to assist the healing of secondary lesions, rest of the whole body, in bed, should be one of the main weapons in the armamentarium of the physician in charge of tuberculous patients. Our observations must lead us to acquiesce in the following statement made by Krause:[1]

> Infection of the lung must be more menacing than that of any other organ, as it possesses the capacity to throw abroad infection to every other part of the body by the blood, and to the upper respiratory and digestive tracts by the bronchi.

### Summary.

1. An analysis of the autopsy findings in 200 consecutive cases of pulmonary tuberculosis reveals a high incidence of extrapulmonary foci.

2. The commonest sites of secondary foci are the intestine and the kidney, and the figures in the present series approximate those found in other countries.

3. As in 68% of terminal cases of pulmonary tuberculosis secondary foci of infection are present in other organs, two essential features in the treatment of pulmonary tuberculosis must be the use of relaxation or collapse therapy where possible, and the rigid institution of rest in bed for a prolonged period.

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## Reports of Cases.

### CASE OF CONSERVATIVE CURE OF HYDRONEPHROS.

By RICHARD FLYNN,
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M.B., A FEMALE, aged forty-two years, was admitted to hospital on November 11, 1936, on account of pain in her right side and vomiting. She had been relatively well until four years previously, when she had become afflicted with a severe aching pain in the right lumbar region, which was accompanied by vomiting of dark greenish fluid; this occurred at 2 a.m., lasted two hours, and was accompanied by intermittent vomiting. She had since had similar attacks, about twenty in all. Sometimes the pain was so severe that hypodermic injections of morphine were required to give her relief. During the four years since the onset of the illness she had to empty her bladder twice at night, but there was no diurnal frequency. Her bowels were relatively constipated all the time and did not seem materially different when the pain was present from when it was absent. She had been given a renal support for ptosis of her kidney, but this had not been of much help. There was nothing else of importance elicited from her personal history.

A freely movable and easily displaced kidney was palpated on the right side; otherwise the results of physical examination were essentially normal. She was referred for a radiograph of her urinary tract both before and after an intravenous injection of "Uroselectan". The radiographer's report, dated July 15, 1936, was as follows: "Well-marked pyelectasis on the right side, with some clubbing of the calyces, and there is some constriction of the ureter about one inch below the pelvis. I cannot see any cause for this stricture, which may be an aberrant vessel." (See Figure I.)

A catheter specimen of her urine was sent for examination and on June 30, 1936, the pathologist reported the absence of pus and red blood cells, but the presence of many motile organisms. On culture of the urine a profuse growth of the *Bacillus coli communis* was identified.

On August 19, 1936, she was examined *per medium* of the cystoscope, and both of her ureters were catheterized. A differential renal function test with indigo-carmine showed that both kidneys secreted a normal blue. A retrograde pyelogram of the right side was made (see Figure II); this showed the size of the hydronephrotic sac very well.

On November 19, 1936, the patient was operated on. A Mayo incision was made in the right lumbar region. The right kidney was easily delivered through the wound, and when the renal pelvis had been freed of fat the ureter was seen to come off about the middle of the dilated pelvis. The upper end of the ureter was bound by adhesions to the lower half of the renal pelvis, and a small abnormal renal artery crossed the adhesion to the lower pole of the kidney. This vessel was clamped, cut and tied, and the pelvis of the kidney and the upper end of the ureter were entirely freed of adhesions. Curved incisions were then made on the anterior and posterior walls of the renal pelvis, running from just above the upper part of the uretero-pelvic juncture to the highest point of the extrarenal part of the pelvis. These incisions allowed the ureter to be drawn down to the lowest point of the renal part of the pelvis. At this stage a silver catheter was passed through the convex border of the pelvis and a ureteric catheter and a small de Pezzer catheter (size 20) were drawn through the kidney substance. These were so arranged that the ureteric catheter reached a point about 12·5 centimetres (five inches) below the uretero-pelvic juncture and the dilated end of the de Pezzer catheter lay in the pelvis of the kidney. The kidney pelvis was sewn up with catgut and the line of suture was reinforced with neighbouring perinephric fat. The kidney was stitched to the last rib with catgut and the lumbar wound was sewn up in the usual way.

The catheters were removed from the kidney on December 1, 1936, and some urine leaked from the wound, which, however, was quite dry the next day. The patient was discharged from hospital on December 16, 1936. On December 9, 1936, an excretion pyelogram was made and the radiographer reported that hydronephrosis was still present on the right side.

The patient has been kept under observation since her operation, and on February 17, 1937, the radiographer reported on an excretion pyelogram as follows: "There is still some slight dilatation of the right renal pelvis, not nearly as pronounced as when seen at the previous examination; both kidneys appear to be functioning quite normally."

A catheter specimen of urine was examined on April 24, 1937, and it was reported to be free of pus and red blood cells, and on attempted culture no growth was obtained. On April 28, 1937, a further cystoscopic examination was made and a pyelogram of the right kidney was done (see Figure IV).

The operation has entirely relieved the patient of her previous pain, and yet it has preserved to her a normally functioning kidney. As the excretion pyelograms suggest that a similar state of affairs exists in the left kidney, though as yet the patient has had no symptoms, the importance of conservatism is demonstrated.

Figures I and III are a contrast to Figures II and IV, and illustrate well the difference in the evidence derived from an excretion and retrograde pyelogram.

## LAPAROTOMY FOR PERFORATED DUODENAL ULCER, WITH INSTITUTION OF DRAINAGE BY MEANS OF KOCHER'S INCISION.

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*Ceduna, South Australia.*

### Clinical History.

THE patient, a man, aged sixty-two years, had had two operations for hydatid disease of the liver. The first was performed thirty-three years ago, a right paramedian incision being used; the second was performed a year later, the incision being parallel to the first, but nearer the middle line. There was also a stab wound, apparently for drainage, at the tip of the tenth right costal cartilage. After this the patient suffered from intermittent attacks of dyspepsia of the flatulent type for the next thirty years.

Three years ago he was admitted to hospital with auricular fibrillation and congestive cardiac failure. He improved gradually and was discharged after six weeks. Since then he has done no work and has constantly been receiving digitalis therapy, the dose being 0·5 cubic centimetre (eight minims) three times a day, one day in seven being missed. During the last three years the attacks of dyspepsia have become more severe and frequent, and the patient has been obliged to live on a light milk diet with suitable alkali before and after meals. Arrangements were made to give him small meals frequently. However, the dyspepsia was never of the type usually associated with the presence of duodenal ulcer, although under this régime the health improved and the dyspepsia was mitigated.

After having been in comparatively good health for several months the patient was awakened early one morning with violent pain under the right rib margin. This increased and the patient vomited twice. He was seen by me about seven hours after the onset of the attack. The pulse was irregular in volume, and an occasional beat was missed; the rate was 96 per minute. The temperature was 37·9° C. (100·2° F.). Respiration was of the shallow thoracic type, and its rate was 28 per minute. Extreme rigidity and tenderness were present, involving the right upper quadrant and extending down into the right iliac fossa, the tenderness being greatest about 2·5 centimetres (one inch) below the tip of the ninth costal cartilage. Percussion revealed dulness extending from the middle line and merging with the liver dulness above and with the right kidney dulness in the flank. The lungs were clear, save for a few crepitations at the right base. A diagnosis of perforated duodenal ulcer was made; and the patient was given 0·016 gramme (one-quarter of a grain) of morphine sulphate and was taken twenty miles by car to hospital.

It was realized that the patient was not a good surgical risk on account of his cardiac condition; furthermore, the previous operations for hydatid disease seemed to promise technical difficulties in approaching the lesion. The incision, therefore, was planned with due regard to speed of operation, adequacy of exposure and avoidance of the adhesions that might reasonably be expected after two hydatid operations. It was decided to use Kocher's incision, as used for operations on the gall-bladder and biliary passages. Ether administered by the open method was used for induction and anæsthesia throughout the operation, and the abdomen was opened. The exposure of the duodenum was easily effected and a small ulcer was found to be perforating that viscus on the right antero-lateral aspect of the second part. This was sutured, and an omental graft was attached along the sutured line. There was free fluid in the right kidney pouch; and this was drained by a tube emerging through the lower and outer angle of the incision. During the operation a dense mass of adhesions was noticed to extend from the old scar to the pylorus, which was bound to the portal fissure; the foramen of Winslow was obliterated and the anatomy of the structures lying in the gastro-hepatic omentum was quite obscured.

The patient was nursed in a position lower than the usual strict Fowler's position, and inclined slightly towards the right side. Drainage ceased from the tube in twenty-four hours and the tube was removed in forty-eight hours. The cardio-vascular system showed no signs of strain during convalescence, which was devoid of interest. The patient made a good recovery.

### Conclusion.

1. Kocher's incision can be used as an alternative to the orthodox paramedian incision, and drainage can be carried out through the wound itself.

2. The exposure of the second part of the duodenum is better than that obtained by means of the orthodox incision.

3. The abdomen can be rapidly opened and closed by this method.

4. It is undoubtedly the best incision to use when there is any likelihood of previous paramedian incisions having left adhesions or having distorted the anatomy of the pylorus and the neighbouring structures.

5. Finally, it is necessary that the diagnosis be certain before this method of approach is employed.

# Reviews.

## SPEECH TRAINING AND CLEFT PALATE.

SURGEONS who undertake the repair of cleft palates in young children know that subsequent speech training is a very important adjunct to operative treatment. Any publication which will help in the training of these children to speak correctly will be welcomed by the surgeon.

The small book which bears the title "Speech Training for Cases of Cleft Palate" is intended to help those engaged in the teaching of these unfortunate patients.[1] The best

[1] "Speech Training for Cases of Cleft Palate", by M. C. Oldfield, M.Ch., F.R.C.S.; 1938. London: H. K. Lewis and Company Limited. Imperial 8vo, pp. 23, with 38 illustrations. Price: 4s. 6d. net.

results will be obtained if an intelligent mother cooperates with a trained teacher. In this book a very good description is given of the various speech sounds and their method of production, the latter being well illustrated so as to demonstrate the relative positions of lips, tongue and palate during speech. Exercises in front of a mirror are recommended for older patients, and massage of the repaired palate soon after operation is advocated to improve its function. Illustrations are also included; these show groups of children performing blowing exercises and playing various games designed to stimulate their interest in the lessons.

The book is well printed on excellent paper and the illustrations are good. It is intended rather for the skilled and trained teacher than for the average mother. A close study of this work by those interested in speech training will enable them to understand the principles involved and will help them to an intelligent application of the knowledge so gained.

## MEDICINE AND RELIGION.

ANYONE who sets out to write a book on the spiritual and bodily needs of man and on the way in which these needs may be met is dealing with an immense but fascinating subject. To be successful he should be well grounded in preventive and curative medicine; he should also have religious convictions, a knowledge of religious beliefs other than those professed by himself, and a wide philosophical outlook on life. Dr. George W. Jacoby, sometime president of the American Neurological Association and of the New York Neurological Society, in his "Physician, Pastor and Patient: Problems in Pastoral Medicine", has produced a sincere and useful, though by no means satisfying volume.[1] The problems are clearly stated and an earnest plea for cooperation between medical practitioners and clergy is made; but the book is disjointed, is like a series of lectures set out under cross-headings and side-headings, and is almost devoid of philosophical discussion on man, his nature, his place in the universe, his struggles, his triumphs and his despair. This is a pity, for if only part of the author's message could be driven home, the practice of medicine would be more effective than it is, and man, ministered to by priest and physician, would be happier.

In his introduction the author makes a most important distinction between theology and religion. Theology is the "science of religion"; it tends to be dogmatic, non-progressive, intolerant and ultra-conservative. Religion is a process in moral evolution which adapts itself to the changing needs of people and their times. Medicine asks of religion that it shall face fearlessly the results of scientific research and appreciate its high aims. Religion in turn asks of medicine an open mind where moral and spiritual evolution is concerned.

The first part of the book deals with the physician's calling. Here the scope of the physician's work, the development of medical science, the foundation of medicine and its relation to contiguous sciences, practical application of the physician's knowledge and the limitations of his profession are discussed.

In the second part chapters are devoted to superstition, "the mother of medicine and religion"; health in relation to the religions of the Orient, and in relation to Judaism; Christianity and Islam. The author also discusses the patient's faith, the survival of superstition and the "inexplicables" in medical practice.

The third part is headed: "Vital Problems Confronting the Physician and the Clergyman". It is by cooperation between pastor and doctor that the author believes some of these problems can be solved. The problems have to do with contraception and artificial abortion, suicide and insanity, divorce, criminality, sex and sex education, euthanasia, and so on. In regard to contraception the author writes: "Both professions should energetically oppose, by education and counsel, the purposeful restriction of fecundity when it serves merely as a cloak for licentiousness . . . The physician and the clergyman must also unite in inspiring healthy and prosperous people not to deprive themselves frivolously and thoughtlessly of a family of children, without which the happiness of every well-regulated, healthy home will always remain incomplete." As a solution to the divorce problem it is suggested that much more can be done through the education of young people before marriage than through endeavours to unravel marital tangles.

The fourth and last part of the book bears the heading: "Where Medicine and Religion Join Hands in Everyday Life". The statement is made that the moral and spiritual life of the individual cannot be developed without a basis of physical and mental health. Moral and spiritual development will be difficult in the presence of mental and bodily illness, but many persons affected by long and painful illnesses have so risen above their disabilities, perhaps because of them, that their characters have had a profound influence on those with whom they have come in contact. What the author aims at is the remedying of conditions which have a bearing on physical and mental health, on moral and spiritual well-being. The author suggests that clergymen should undergo a certain amount of training in the principles of hygiene. It would not perhaps be out of place to add that medical practitioners will be the better fitted for their difficult work if they pay at least some attention to religion.

## DIABETES MELLITUS.

IN the second edition of his manual on the diagnosis and treatment of diabetes,[1] Dr. W. Wilson Ingram maintains the generally high standard set in the first edition. The size of the manual has increased by 52 pages. There are two new chapters, one dealing with surgery and pregnancy in diabetes, and one with an analysis of the diet lists. The appendices have been increased from two to three, the new one consisting of tables of average heights and weights of Australians at different ages. There has been scarcely any rearrangement or alteration of the material that appeared in the first edition.

The discussion of the management of diabetes in pregnancy is clear and concise. The same may be said of the section dealing with surgery. Here the choice of anæsthetic and the preoperative and post-operative treatment of the patient are briefly discussed. These sections are valuable additions to the book.

The analysis of the diet lists has been extended in this edition, so that the inquirer may see at a glance the quantities of the various constituents, the caloric value and the ratio of fatty acid to glucose in any of the meals that are tabulated.

The food tables have been revised and supplemented. The carbohydrate content of Australian fruits and vegetables has been estimated by newer methods, and the results are published here for the first time.

The chapter on insulin has been supplemented by a short discussion on insulin retard and zinc protamine insulin.

We note that Dr. Ingram still regards Maclean's "lag" curve with suspicion. Most authorities believe that this type of response to the glucose tolerance test does not indicate *diabetes mellitus*.

This small book is unique and valuable. It has been improved in its second edition, and no medical practitioner in Australia can afford to be without a copy.

[1] "Physician, Pastor and Patient: Problems in Pastoral Medicine", by G. W. Jacoby, M.D.; 1937. New York: Paul B. Hoeber Incorporated; Australia: Angus and Robertson Limited. Demy 8vo, pp. 399, with illustrations. Price: 21s. net.

[1] "The Diagnosis and Treatment of Diabetes and the Use of High Carbohydrate Diets", by W. W. Ingram, M.C., M.D.; Second Edition; 1937. Australia: Angus and Robertson Limited. Crown 8vo, pp. 148. Price: 6s. net.

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## CANCER RESEARCH.

"THE days of our years are threescore years and ten; and if by reason of strength they be fourscore years, yet is their strength labour and sorrow." This is a truth which man deliberately refuses to believe. It is part of the general biological fact that man differs from other animals in the lengths of the age periods which make up his span of life. An intrauterine life of nine months provides seclusion for his cerebral development and the prolonged periods of infancy, while childhood and adolescence demand parental guidance for the development of that independence which he must manifest in adult life. In each period certain diseases lie in wait for him; and should he pass the adult period and arrive at the threshold of senility, fortified with the possession of this world's goods, he must yet evade the peril of cancer to reach his allotted span. The struggle for existence in the animal kingdom is a brutal exhibition of selfishness. But with man the elimination of self and service for the whole community in the bonds of charity have been the theme of moralists from time immemorial.

The Annual Report of the Chief Medical Officer of the Ministry of Health of Great Britain for the year 1936 makes interesting reading. In the period 1901-1905 the standardized death rate *per annum* from cancer was 849 per million living; in 1936 it was 1,010—a rise of 161 per million. The death rate from all forms of tuberculosis fell from 1,739 to 657 in the same period—a fall of 1,082. While 1,010 died from cancer at ages unstated, at ages under fifteen years 297 died from measles, 43 from scarlet fever, 318 from diphtheria and 228 from whooping cough. When all diseases causing death under the age of fifteen years are considered collectively, it is found that on an average 2,990 per million living died each year in the 1901-1905 period and 883 in the 1931-1935 period—a fall of 2,107 per million. Obviously the full effect of the saving of children's lives between the years 1901 and 1936 has not yet seriously affected the figures for the cancer death rate; but the increase must take place.

There is nothing unusually alarming about the death rate from cancer. There has been too much emotional outcry that to the "average" mind (whatever that is) and to the "average" family the term cancer connotes something in the nature of calamity. If the children held the purse strings, would they donate money for cancer research or for the investigation of those diseases—measles, scarlet fever, diphtheria and whooping cough—which have taken toll of 883 persons per million living? We prefer to think, since out of their mouths has wisdom been perfected, that money would be given to those institutions in which research in first principles would be conducted.

The study of cancer, in common with research into other diseases, should be conducted in an atmosphere of calm and in accordance with primary principles. It should be conducted continuously because of its intrinsic biological interest; and it would therefore appear more reasonable to devote funds for general medical research rather than for the investigation of specific diseases. It must be admitted, however, that money subscribed for cancer research is very useful for the equipment of laboratories which would languish in the absence of an emotional stimulus.

Some universities refuse to accept money which is given for a specific purpose. Unbalanced donations to institutions of learning often lead to embarrassing situations because the donors have no experience of the value of the research which they endow. It is conceivable that if the money which has been expended on the study of cancer had been used in general biological research and in the investigation of medical problems, more of cancer's secrets would have been revealed; certain it is that general medical research would have been advanced.

## Current Comment.

### DERMATOSES DUE TO VITAMIN A DEFICIENCY.

SPECIFIC lesions of the skin due to a deficiency of vitamin *A* have been described by several observers during the past seven years. It is not surprising that the original reports came from China, Africa and India. Similar dermatoses had been observed previously in patients suffering from nutritional deficiency, but their actual relationship to a lack of vitamin *A* was recognized only recently. The lesion first described by Fraser and Hu was a dry papular eruption associated with a disturbance of the sebaceous follicles of the skin, in which firm plugs covered by adherent scales could be demonstrated. Nicholls in India named the condition "toad-skin", and though minor variations were described by him and others, the salient features of this dermatosis were the appearance of a scaly papular eruption on the extensor surfaces of the thighs and arms and to some extent on the trunk, and the coexistence of comedones and acneiform lesions, which seldom, if ever, progressed to pustulation. The microscopic identity of the lesions seen by different observers has also been established.

Since the food and the conditions of life in Asia and Africa are not comparable with those of the better-fed denizens of the western world, reports of similar lesions of the skin have been slow to appear; but J. B. Youmans and M. B. Corlette now publish an account of a series of cases studied over a period of two years.[1] The patients manifested chiefly on the antero-lateral aspects of the thighs and arms lesions which were of a dry papular character, like those described by previous writers. Pigmentation was observed to a slight degree in negro patients, but not in whites. Comedones were sometimes present, but in no instance was infection of the skin found. In some instances the skin resembled coarse sandpaper or gooseflesh, and a whitish scale could often be seen on the top of each lesion with the aid of a hand lens. Decrease in the dermatosis was noted after the administration of vitamin *A*, though the eruption did not disappear in every case and was often slow to resolve. The administration of cod liver oil by mouth proved effective in some cases, but was not always so; in one case, for example, twelve weeks of treatment with cod liver oil failed to cure the condition, whereupon 16,000 international units of vitamin *A* were given daily in the form of halibut oil "concentrate" with good results. It may be asked if definite evidence of vitamin *A* deficiency in the diet was forthcoming. It was in some cases, but in others there was no obvious lack of the appropriate foods. Photographs of the skin lesions are appended to Youmans and Corlette's article, together with photomicrographs of several papules excised for the purpose of study and of identification with the lesions described by other authors.

Although the authors seem to have proved their contention that these cases of dermatosis are associated with vitamin *A* deficiency, they are not confident of the specific relationship in every instance. They point out that though this dermatosis is acneiform in type, differentiation from acne is assisted by the greater age of the patients, by the distribution of the lesions, and by the rarity of skin infection. They did not observe any striking ocular changes similar to those described in other cases of vitamin *A* deficiency, but call attention to the belief that the onset of skin changes may precede the occurrence of night blindness, conjunctival lesions and other eye disturbances.

The attention of Australian practitioners may well be drawn to the desirability of remembering this possible cause of a specific dermatosis. Fortunately the means of relief are simple, though it is well to point out that patience is necessary, since response of the lesions to treatment is often somewhat tardy.

[1] *The American Journal of the Medical Sciences*, May, 1938.

### THE FATIGUE SYNDROME.

G. K. WHARTON, in a recent dissertation on the fatigue syndrome,[1] explains that this expression indicates a group of symptoms complained of by those who suffer from mental or physical depletion. He describes that group of patients who suffer from chronic fatigue which is unrelieved by moderate rest. He includes a further group whose fatigue is masked by overactivity to such an extent that the sufferers themselves are unaware of their condition. Wharton reiterates what is well known, but often forgotten, namely, that it is worry that kills, and that work seldom leads to the chronic condition which is designated by the term fatigue. Overwork, therefore, is not to be considered a cause, but a manifestation of their maladjustment. In general it is not overwork that leads to a nervous breakdown; the nervous breakdown drives the individual to overwork. Excessive activity is often suggestive

[1] *The Canadian Medical Association Journal*, April, 1938.

of a mental conflict. Insomnia is another condition in which the result is frequently mistaken for the cause.

The psychogenic factors which predispose to the symptoms of overwork, insomnia and other complaints, are manifold and may occur in many combinations. Whatever sufficiently upsets the mental balance of a person will evoke fatigue. Insecurity of home, affections, health or employment becomes a powerful emotional factor causing fatigue. Fear and worry from any cause will act similarly, and any emotional excess will produce exhaustion. Wharton suggests that this may largely be the result of suprarenal deficiency. More protracted emotional states, such as dissatisfaction or unhappiness, may reveal themselves in a less obtrusive physiological manner, but may lead to a more severe state of prostration. Frustration, a feeling of lack of purpose in life or a sensation of its incompleteness, leads to a chronic depletion of energy. Indecision wastes much energy and has a cumulative effect, leading to a chronic inability to make decisions and accordingly to self-depletion. Persons may tire from monotony or from routine repetition, particularly if the work in hand is below their mental capacity. This weariness may be noticed in school children. It cannot be too strongly emphasized that school fatigue is not of necessity due to an excess of lessons, but may arise from a continuous activity of body and mind, often apparent in children at boarding schools.

Over-stimulation is an even more powerful cause of fatigue. Alcoholism may result from over-stimulation or from monotony. Indulgence in alcohol is generally a means of escape rather than an end in itself. Wharton reminds us that alcoholism, drug addiction, religious fanaticism, exhibitions of temper, and suicide, are indications of "psychopathology". The emotional derangements which incite these conditions frequently display themselves early in the reaction of fatigue. A nervous temperament conduces to rapid exhaustion and repeated fatigue increases nervous instability. A vicious circle is thus established. Psychological phenomena have physiological correlates and somatic changes alter mental states. No matter which come first, the whole organism is involved. Many endocrine disturbances may contribute to the fatigue syndrome or even constitute its most important factor. Thyroxine has for its main function the sensitization of every cell and organ in the body to sympathetic stimulation. This stimulation is mainly under the control of adrenaline. Over-activity of the thyreoid gland is disclosed by an over-excitement of the sympathetic nervous system, which leads to an increase in cellular metabolism. Hypothyreoidism, Wharton states, is often an underlying cause of the fatigue which results from a slowing of the metabolism. When the state of hypothyreoidism is advanced we have the familiar manifestations of mental dulness and apathy. But it is also a well-known fact that mild conditions of hyperthyreoidism may likewise be attended by tiredness. The author considers that the explanation of this early tendency to fatigue is that an excess of thyroxine sensitizes the cells to adrenaline which in turn depletes the glycogen storage in the muscles and liver. Fatty changes have been demonstrated in the suprarenal cortex of physically fatigued animals. In hypoadrenalism the blood pressure is, as a rule, low, and there is an increased liability to fatigue from muscular activity. Such a condition may aptly be compared with a mild form of Addison's disease. Dyspituitarism, particularly when the anterior lobe is implicated, is often associated with fatigue. This weariness may originate in part from lack of the nitrogen metabolic hormone which augments the specific dynamic action of proteins. The anterior lobe of the pituitary gland acts likewise through the fat metabolic hormone, thus increasing fat metabolism. A further possibility is that an enlarged pituitary gland may press upon the "sleep centre" and induce excessive drowsiness. In the Cushing syndrome of basophilic adenoma fatigue and weakness are deemed to be symptoms of major importance. Hypogonadal changes may be associated with fatigue, since after castration animals become sluggish. The exhaustion of adolescents is more likely to be associated with a conspicuous increase in physical development and weight than with endocrine derangement. In the late stages of hyperpituitarism, hypergonadism, hyperadrenalism and hyperthyreoidism these glands are exhausted and muscular weakness results. In Simmonds's cachexia and in Addison's disease muscular weakness is a common phenomenon. Little is known of the ætiology of *myasthenia gravis*. It may be associated with exophthalmic goitre. The fatigue of the muscles which occurs early in myasthenia may be diminished by treatment with adrenaline or ephedrine. This fact suggests a close association between *myasthenia gravis* and the suprarenal gland. Fat people are often considered lazy, but recent work has demonstrated that in obese persons there is a diminished specific dynamic value of proteins and carbohydrates. The fat person does not derive the same energy value from his food, and yet he does much extra work in carrying himself about. He is therefore fatigued more rapidly. Wharton considers that fat people are not lazy, but on the contrary over-active. Obesity may be the result of pituitary, thyreoid, adrenal or gonadal disease.

Fatigue and allergic manifestations may occur in the same person. At the time of an asthmatical attack fatigue will be out of all proportion to the true severity of the condition. Patients suffering from allergic conditions are not as a rule subject to essential hypertension or to spastic changes in smooth muscle, and this freedom suggests that hypoadrenalism is their basic defect. Such general diseases as tuberculosis, anæmia and arteriosclerosis and sensory defects, particularly eye-strain and deafness, are manifested by the early development of fatigue. These and many other conditions are exhaustively dealt with in a very thoughtful contribution.

# Abstracts from Current Medical Literature.

## MEDICINE.

### The Modern Outlook on Tuberculin.

H. J. PARISH (*Tubercle*, May, 1938) discusses the recent advances that have been made in the preparation and use of tuberculin. He points out that the active principle is a single constituent, a protein. With the discovery of this active principle (purified protein derivative or P.P.D.), which possesses the several virtues of purity, specificity of action, high potency, stability and constancy of strength, all other tuberculins can be expected to disappear from clinical practice. The author gives detailed directions for the preparation of P.P.D., both in solution and in tablet form. In regard to the diagnosis of tuberculous infection, the author considers that the Mantoux test should replace all others, as it permits accurate and graduated dosage. In view of the fact that more individuals are reaching adult life without becoming infected, tuberculin is playing an increasingly important rôle in the diagnosis and prognosis of tuberculosis. A positive reaction indicates that the tissues have been sensitized to tuberculin, but it does not distinguish between infection and disease. The intensity of the Mantoux test cannot be correlated with the type and extent of the primary lesion present; and while it may be an asset for a person to give a positive reaction, it is not definitely known in which cases a positive reaction should be regarded as a liability. It has been estimated that 80% of all positive reactors never develop active tuberculosis; but it cannot be said that an individual belongs to this group and not to the less fortunate 20%. Absence of reaction excludes active tuberculosis, with few exceptions. The Mantoux test has considerable epidemiological value, in determining the amount of infection in a community.

### Trauma in Pulmonary Tuberculosis.

MAX H. SKOLNICK (*The British Journal of Tuberculosis*, January, 1938) reports the case of a man who, following extreme conditions of exposure, became ill with progressive pulmonary tuberculosis. He discusses the external factors, particularly occupational hazards, which may result in activation of dormant tuberculosis. He quotes authorities to show that whenever any environmental influence puts the body under physiological strain it has the capacity to activate infection already present. Thus almost any condition which lowers the resistance of the body to disease may predispose to tuberculosis. It is now well recognized as an industrial accident, caused by injury, excessive fatigue, extreme heat or cold, or by other respiratory diseases if these arise out of employment. He concludes that trauma in a broad sense plays a definite rôle in the activation and progression of pulmonary tuberculosis, and that it may continue to exert its deleterious effect on the individual even after apparent recovery from the initial symptoms it has produced. Trauma acts by lowering bodily resistance, thus predisposing to the development of an already present tuberculous infection.

### Bilateral Pulmonary Tuberculosis.

JACQUES STEPHANI (*La Presse Médicale*, January 5, 1938), after studying radiographically one hundred patients with pulmonary tuberculosis, is satisfied that in the majority of cases the disease becomes bilateral at an early stage. In 56% of his cases the disease had become bilateral within an average time of four and a half months from the first appearance of any symptom. This occurred most frequently when cavitation was present, giving point to the now well-recognized fact that an untreated cavity is a source of danger. In most cases it was evident that the disease had spread to the opposite lung by metastasis, an old lesion in one side being easily recognizable radiographically, associated with more recent spread in the opposite lung. In quite a number of cases, however, it seemed likely that tuberculosis had commenced in both lungs simultaneously, or that at least the contralateral spread had been extremely rapid.

### The Effects of Transfused Blood.

E. HESSE (*Journal of the Mount Sinai Hospital*, November, 1937) reviews the effects on the body of transfused blood, which he classifies as substitutive, hæmostatic, immunobiological, detoxicating and stimulative. The last is emphasized. Severe hæmorrhages do not exhaust the so-called "reserve depots of blood" in the spleen, liver, great veins and skin. Transfused blood is the most powerful known stimulator of vascular tone and mobilizer of the blood contained in the reserve depots. In traumatic shock the blood flows to the reserve depots; blood transfusion corrects this pathological redistribution of blood. There is no doubt that the determination of the blood pressure is still the most reliable means of estimating the severity and danger of this redistribution.

### Hæmorrhagic Purpura.

H. W. JONES, L. M. TOCANTINS AND R. M. SMITH (*Annals of Internal Medicine*, January, 1938) report twelve cases of hæmorrhagic purpura treated by irradiation of the spleen, and conclude that this is not a satisfactory form of treatment for all patients with this disease, even when skilfully applied in adequate dosage. Previous reports that splenic irradiation would increase the number of blood platelets and control hæmorrhagic phenomena they regard as far too sanguine. Though the treatment may occasionally be successful, it is not devoid of danger, especially from sudden anæmia and granulopenia. If a patient is not dangerously ill from loss of blood, the medical attendant should temporize in expectation of spontaneous recovery. If anæmia is profound or progressive, the authors consider that small transfusions of blood should be given as often as required. X ray treatment, in their opinion, is given in serious cases with the knowledge that it may be inefficacious. Splenectomy they regard as a last resort.

### Anacidity and Gastric Carcinoma.

RECORDS of seventy-nine patients whose gastric acidity has been examined both before and after the development of gastric carcinoma at the Mayo Clinic are critically discussed by M. W. Comfort *et alii* (*American Journal of Digestive Diseases*, December, 1937). Surgical findings, radiographic examinations and the lapse of time are the factors on which the evidence against the presence of carcinoma is based. In thirty patients anacidity was found at both examinations; in twenty-one free acid was present at the first examination and anacidity at the second; in twenty-eight cases free acid was present at both examinations in spite of the development of cancer of the stomach. Thus after an average interval of six years, and after each patient had developed cancer of the stomach, the percentage of achlorhydria had increased from 38% to 65%. The depression of gastric acidity in patients destined to develop carcinoma of the stomach would appear to be a progressive and a selective process, appearing early in life and at all ages. In these authors' opinion the low secretory activity of the stomachs of patients with gastric cancer is present for the most part before the development of the cancer. The loss of gastric acidity occurs in patients with both high and low concentrations of free acid, but more frequently in the cases in which the concentration of acid is low before the development of cancer. A further fall in gastric acidity occurs after the development of cancer; its frequency and importance are unknown. The three possible causes of achlorhydria are a developmental defect in the secretory cells, an abiotrophy of the acid-secreting cells occurring after birth, and inflammatory destruction of the gastric mucous membrane. The loss of gastric acidity in adult life excludes a developmental defect as the cause of the loss in a considerable number of cases, while the presence of a marked diffuse atrophic gastritis in almost all cases of achlorhydria and the absence of a marked diffuse atrophic gastritis in almost all cases in which there is free hydrochloric acid in the gastric

contents, greatly favour chronic atrophic gastritis as an important cause; in these authors' opinion, chronic atrophic gastritis is the important cause. Chronic gastritis as well as the tumour itself, by its local and systemic effects, may be responsible for the depression of gastric secretion after the development of gastric cancer.

### The External Secretion of the Pancreas.

MILTON B. HANDELSMAN (*Annals of Internal Medicine*, February, 1938) surveys the literature dealing with the digestive and absorptive function of the external secretion of the pancreas. He points out that much of the earlier experimental work has to be discounted, as most workers failed to exclude pancreatic juice from the intestine because of anatomical difficulties in ligating the pancreatic duct. Depancreatized dogs were said to die of inanition although they ate large amounts of food and the glycosuria was controlled by insulin; the stools were reported as containing tremendous amounts of fat, although they were not analysed chemically. It was then found that life could be prolonged in these animals by including raw pancreas in their diet, and it was assumed that enzyme action was the beneficial factor. Absence of the external secretion from the intestine does not seem to be incompatible with a fairly long and healthy life. On the other hand, complete pancreatic fistula with continuous loss of the secretion outside the body leads to death in five to eight days, due to a disturbance of the acid-base economy of the body. The fatty infiltration of the liver in these animals seems to be related in some way to the internal secretion of the pancreas. It has been shown that in the absence of the external secretion of the pancreas the digestive mechanism is labile, good at times and poor at other times; only in the carbohydrate fraction does this lability seem to depend on the diet as manifested by a higher percentage of carbohydrate in the stool. The nitrogen and fat absorption are also labile, but the factors causing these variations are not completely understood. Fat digestion and absorption are particularly complicated. The duty of the pancreatic juice seems to be to split the neutral fat in preparation for the absorption of the fatty acids combined with bile acids. In the absence of the pancreas a compensatory mechanism splits the fat; gastric lipase, intestinal lipase and bacteria in the colon all have the power of splitting fat, but their relative importance is most difficult to estimate. The bile acids do not act on neutral fat, but they form physical complexes with fatty acids, and these are readily absorbed. There are factors in the splitting and absorption of fat in the absence of pancreatic lipase that are as yet unknown. Further studies must clarify our knowledge of the importance of vitamins, mineral content, differences of various fats and the hydrogen ion concentration of the intestinal contents. Experimental studies involving the administration of pancreas, fresh or in the form of extracts, to animals without pancreatic secretion, have been contradictory and give no conclusive proof of the rôle played by pancreatic lipase. The consistent improvement obtained in the digestion of carbohydrates and protein in these experiments does not hold for fat. The presence of internal secretions has been postulated to explain fat absorption or to regulate gastro-intestinal motility; the facts do not justify this assumption.

### Pneumothorax in Asthma.

MARIANO, R. CASTEN AND E. S. MAZZEI (*La Presse Médicale*, April, 1938) describe the occurrence of spontaneous pneumothorax in an asthmatic subject. A young man, aged twenty-five years, who suffered from attacks of asthma once a month, was found to have a spontaneous pneumothorax, discovered by X ray examination. There had been no dramatic symptoms. With rest, recovery occurred in three months. There was no evidence of tuberculosis. Rupture of alveoli in asthmatics may give rise to subcutaneous emphysema or to pneumothorax. Barely a dozen cases of either of these accidents have been reported. Galliard stated that such events were very rare among patients with marked emphysema (*les grands emphysémateux*). Spontaneous pneumothorax in asthma is said to occur in young subjects. The onset is accompanied by pain and breathlessness, which is usually different from the typical dyspnœa of the asthmatic patient. Recovery is the rule. In one case autopsy revealed a large marginal emphysematous bulla, and in another dilated alveoli, of which two had ruptured. Emphysematous bullæ may rupture into the pleura, causing pneumothorax; 'or into the mediastinum, causing interstitial emphysema, which, by extending towards the hilum, the mediastinum or the neck, may cause subcutaneous emphysema.

### Treatment of Splenomegaly by Injections of Milk.

IN 1932 Singh reported favourable results following the intramuscular injection of milk in patients with splenomegaly, particularly of malarial origin. Spleens which were enlarged to the umbilicus were found to retract under the costal margin after three or four, or at the most five injections. C. L. Pasricha (*The Indian Medical Gazette*, April, 1938) reports the treatment of 100 patients suffering from splenomegaly not of kala-azar origin with injections of sterile skimmed milk. The patients selected had greatly enlarged spleens, which extended to the umbilicus or lower. They had no history of kala-azar and their sera failed to respond to both Chopra's and Napier's tests for that disease. All the patients were afebrile and no parasites were found in the blood films; the patients had for the previous three months been under the usual treatment without any noticeable effect upon the spleen. In 70 cases the injections were made intramuscularly and in 30 cases intracutaneously. By the intramuscular route sterile skimmed milk was given in a preliminary dose of four cubic centimetres, and thereafter in gradually increasing doses to 16 cubic centimetres at intervals of from five to seven days. By the intracutaneous method 0·1 cubic centimetre to 0·3 cubic centimetre of the milk was injected, with a maximum of 0·2 cubic centimetre at any one site, at intervals of from five to seven days. There was a great reduction in the size of the spleen in approximately 50% of patients treated. Better results were obtained by the intramuscular route, probably on account of the larger amount of protein injected by this method.

### Protracted Incubation in Malaria.

BRUCE MAYNE (*Public Health Reports*, November, 1937) reports a case of prolonged incubation period in benign tertian malaria. On October 14, 1935, the author, in the United States of America, received a suspension of sporozoites of *Plasmodium vivax* (Madagascar strain) from England. The culture medium used was defibrinated human blood, with sodium dextrose (1%) added. On October 23, 1935, the culture was inoculated into a patient. The first malarial paroxysm followed a year later, on October 6, 1936. The attack was severe, with eight well-marked paroxysms, the maximum temperatures being from 40·6° C. to 41·7° C. (105° F. to 106° F.). Typical *Plasmodium vivax* parasites were demonstrated in blood films. Severe symptoms were shown, and the attack was terminated. The patient was under observation for the whole of the intervening period, and it is considered that reinfection or recrudescence can be definitely ruled out. A review of the literature of long latency in malaria is included.

### Treatment of Malaria with Sulphonamide Compounds.

THE United States Public Health Services publish a translation of a report by Amonario Diaz de Leon, of Mexico (*Public Health Reports*, October 15, 1937), which is believed to be the first account of the use of sulphonamide compounds in the treatment of malaria. "Rubiazol" (Roussel) was given in 15 cases of benign tertian malaria with complete success. The author is sure that the compound is an effective specific drug for this form of malaria, and intends extending the experiment to other types of malaria. A warning of the possible toxic effects of the drug is included.

# British Medical Association News.

## SCIENTIFIC.

A MEETING of the Tasmanian Branch of the British Medical Association was held on April 12, 1938, at Millbrook Rise Rest Home. The meeting took the form of a number of clinical demonstrations by members of the staff of the hospital.

### Dementia Præcox.

DR. C. R. D. BROTHERS showed two patients suffering from *dementia præcox*. Dr. Brothers said that *dementia præcox* was a term applied to a variety of signs and symptoms which occurred chiefly in adolescents, but which could not yet be said to describe entirely a definite disease. Most patients had hallucinations, and delusions were common; but the keynote of the condition was a general loss of emotional reaction characterized by loss of natural affection, indifference to the future and lack of interest in the present. The disease had been classified into four varieties. The first was simple *dementia præcox*, which was characterized by a progressive mental deterioration about the time of puberty; it commonly occurred in individuals who already displayed some congenital intellectual defect. The second variety was hebephrenia, which was characterized by depression, dulness and apathy and the avoidance of the company of others. The third variety was katatonia, in which, characteristically, disorders of volition occurred, for example, various attitudes, mutism, verbigeration, echolalia, mannerisms and *flexibilitas cerea*. The fourth variety was *dementia paranoides*, in which delusions and hallucinations were most prominent.

In most cases a gradual intellectual deterioration occurred, terminating in dementia, although at times prolonged remissions might take place.

At intervals during the past twenty years various kinds of treatment had been tried and for the most part had failed to prove their value in a large series of cases or had proved to be only of limited application. The chief of these methods of treatment were: (*a*) endocrine shock treatment, massive doses of thyreoid extract being used; (*b*) pyretic shock treatment, including the use of malarial blood, "Sulfosin" and "Pyrifer"; (*c*) chemical; and (*d*) elimination of septic foci as advocated by the American school some years earlier.

Dr. Brothers went on to say that four years previously Sakel first reported the new method of treatment in these cases, namely, the use of insulin in deliberately producing a hypoglycæmic state. The insulin might produce its effects directly by improving the carbohydrate metabolism of the whole body, or indirectly by stimulating hormone production in other endocrine glands, especially the pituitary and adrenals. It was thought that possibly the hypoglycæmia stimulated the sympathetic centres in the hypothalamus. A year later von Meduna, of Budapest, produced epileptiform convulsions in human beings by the use of a 25% solution of camphor in olive oil. At the present time he used pentamethylenetetrazol ("Cardiazol"). This form of therapy was based on the recognition of the antagonism between katatonic schizophrenia and epilepsy.

Dr. Brothers said that at Millbrook Rise they were using both forms of therapy, insulin in hebephrenia and *dementia præcox paranoides*, and "Cardiazol" for katatonics. Dr. Burgess had treated two patients with insulin; both had been discharged from hospital and were still reported to be normal. Their recovery was almost dramatic. The third patient was at present undergoing treatment. During the previous month they had begun to treat eight patients with "Cardiazol". Two, whom he would show later, were practically ready for discharge. The remainder were still under treatment.

Dr. Brothers's first patient was a young man, aged thirty-three years, suffering from katatonic primary dementia. He had formerly been a school-teacher. His mental disorder dated from the age of twenty years, but records of his illness were available for the preceding five years only. On admission to hospital in February, 1933, he was unable to answer questions readily; when he did speak, his speech was quite irrelevant and incoherent. He would glance furtively, at the same time blinking his eyes rapidly. Immediately prior to his admission to hospital he had shown disorder of conduct. He had become impulsive in manner towards other members of his family, would wander aimlessly about the house, and refused to go to bed. On the street he was erratic in behaviour, jumping about in a most foolish manner.

Except for a coated tongue, no abnormality was found on physical examination. During his first year at Lachlan Park Hospital he appeared to be emotionally dull and apathetic, and apparently quite indifferent to his surroundings. He rarely spoke, except in monosyllables. When addressed, he would turn his head away and smile inanely. He was seclusive in habits, and manifested the characteristic shut-in personality of the primary dement.

Two years later, as was indicated in the clinical notes, he was far more talkative. He stated that he was writing a book on the south seas, but had not yet begun it. He admitted auditory hallucinations, and would hear strange voices commanding him to sing. At this time great mental preoccupation was obvious. When he was asked a question he would repeat the first half of it and forget the rest; at other times he would completely forget what was asked of him and would give most irrelevant replies. When asked his age, he said he was twenty-one years old, although actually he was thirty, and that he had been in the hospital a few weeks.

In 1936 he showed pronounced symptoms of impulsive and violent behaviour; he would have attacks of increased psychomotor activity, running about and attacking both patients and attendants for no apparent reason. He was very silly and would giggle inanely, appearing to be in the excited phase of katatonia, whereas he was in the depressed phase.

This condition continued until four months before the meeting, when he appeared to be approaching something like the katatonic stuporose stage. He was now given to the typical mannerisms, antics, stereotyped movements, grimacing and posturing so frequently found in such cases. The week before the meeting he was mute, standing in the one absurd but fixed posture for hours at a time. He also manifested *flexibilitas cerea*.

In discussing this case Dr. Brothers said that, as the patient was a katatonic, he would normally be an ideal subject for "Cardiazol" therapy. Unfortunately his history was of such long standing that it was, and would be, a waste of material to treat him. Von Meduna stated that he obtained no improvement in cases of four years' duration and longer.

Dr. Brothers's second patient was a young man suffering from hebephrenic primary dementia, who had been admitted to hospital on February 15, 1938, at the age of twenty-six years. He had formerly been a farm labourer, and as far as was known had been abnormal mentally for one week prior to his admission.

Dr. Brothers quoted the following passage from the patient's certificate:

> He had a laceration on his throat which he stated was self-inflicted. He informed me that he wished to kill himself because he was worried over separation from his wife, who left him three years ago. He said his fellow workers said such awful things to him that he was frightened, but could not remember any of the remarks. Speech is very sluggish and disjointed.

On admission to hospital he was emotionally dull and apathetic, and was averse to talking about himself. He appeared to be worried and depressed, but was unable to give any reason. He was unable to give any reason for cutting his throat. He would not talk much, and would not answer questions readily. He stated that he heard voices at night, especially the voice of his wife. He was well orientated and showed no memory defect. His

attention and concentration were faulty; and he apparently had no insight into his condition. Physically, no abnormality was detected.

On February 17, 1938, he was still quiet and apathetic, speaking only when spoken to. He stated that he had no worries. On February 18, 1938, he was somewhat brighter. He smiled foolishly and answered questions only after a long interval. He had then the aloof and shut-in appearance of a primary dement. On March 12, 1938, he attempted to climb over the wall of the airing-court. Asked why he did it, all he would say was: "Oh, just to have a look." He was emotionally dull and apathetic, and rather foolish and erratic in behaviour. He admitted hearing voices, but was apparently becoming quite indifferent to them. He was very anergic and totally lacking in initiative, except that of an impulsive nature. Between March 15, 1938, and March 18, 1938, he was given three intravenous injections of "Cardiazol", each injection producing a seizure. Even then he was very foolish and erratic in manner and conversation. He had a silly, inane grin, as if he had some secret joke of his own, and was completely indifferent to his surroundings. On March 19, 1938, an injection of 6·5 cubic centimetres produced no fit; on March 21, 1938, an injection of 7·5 cubic centimetres produced a fit in ten seconds. After this he appeared a great deal better and was able to converse rationally and to give a good account of himself. However, he was still anergic and would lie on the grass all day. On March 24, 1938, an injection of 7·5 cubic centimetres produced a fit in twelve seconds. Next day he asked for work, saying that he had been a hard worker all his life and thought work would occupy his time. Since then he had been given semi-parole and had been working exceedingly well in the grounds. On March 28, 1938, an injection of 8·0 cubic centimetres produced a fit in fifteen seconds; on March 31, 1938, an injection of 8·0 cubic centimetres produced a fit in sixteen seconds, and on April 4, 1938, an injection of 8·5 cubic centimetres produced a fit in fifteen seconds.

At the time of the meeting the patient was quite rational, and, as far as was known, he was mentally normal in every way. Dr. Brothers said that it was the intention to give him three more injections before discharging him from hospital.

DR. CLARA BURGESS showed a female patient, aged twenty-six years, unmarried, who was considered to be suffering from the katatonic type of schizophrenia. She had had scarlet fever one year previously, and had been "quiet" ever since. For the preceding two months she had been worried about the question of marriage. Two weeks before admission to hospital she refused to speak, except for answering questions in monosyllables. Periodically she had outbursts of impulsiveness, but would sit for hours in the one position staring into space.

A paternal aunt was a certified mental defective in Lachlan Park Hospital.

She was admitted to Lachlan Park Hospital on December 17, 1937. She was quiet, but resistive and uncooperative. She would reply to questions in monosyllables. On December 19, 1937, she was talking a little, but had to be hand fed. She said she had met Dr. Burgess before, and that Dr. Burgess knew her father, which was not so. Emotionally she was dull and apathetic, and appeared to be quite out of touch with reality.

On December 30, 1937, she had been mute for some days and had to be hand fed. She remained more or less in this condition till March 8, 1938, when she was given her first injection of "Cardiazol", which produced a major fit in ten seconds. Ten minutes later she spoke spontaneously for the first time for several weeks.

On March 9, 1938, injection of 5·0 cubic centimetres of "Cardiazol" produced no fit; on March 10, 1938, injection of 6·0 cubic centimetres of "Cardiazol" produced a fit in six seconds. Mentally she was greatly improved, but appeared somewhat delusional. She said her mother was dead and that she (the patient) lived over the wall. Emotionally she was a great deal brighter. On March 11, 1938, an injection of 6·5 cubic centimetres of "Cardiazol" produced a fit in twelve seconds; she vomited after this fit. On March 13, 1938, she appeared to have lost all of her former delusional ideas about her family. She was talking normally and occupied herself by mending her own clothes. She asked to visit her aunt in the adjoining ward.

On March 14, 1938, she was transferred to Millbrook Rise Rest Home. She said: "A few weeks before I left home I used to get crabby and irritable with mother. I was very worried about the voices I was constantly hearing, but now they have all gone." Between March 16, 1938, and March 23, 1938, she had three more injections of "Cardiazol". On March 24, 1938, she appeared to be very foolish and soiled her bed. On March 30, 1938, she was given the tenth injection of "Cardiazol", consisting of 8·0 cubic centimetres. On April 7, 1938, she was said to have become very dull emotionally and again definitely sluggish during the preceding two days. An hour after her injection on this occasion she appeared to be quite normal again. Dr. Burgess said that the patient was still under treatment, and in spite of one or two relapses was expected to do very well.

Dr. Burgess next demonstrated a typical case of katatonic primary dementia of long standing for the purposes of comparison with the previous case.

The patient, who was then aged thirty-four years, was admitted to the Lachlan Park Hospital on April 17, 1929, when she was aged twenty-five years. She was still in a condition of katatonic stupor, exhibiting mutism and *flexibilitas cerea*. On account of her long history she was considered unsuitable for "Cardiazol" treatment.

### General Paralysis of the Insane.

Dr. Brothers showed a married man, aged thirty-two years, suffering from general paralysis of the insane. He had suffered from hæmolytic jaundice from the age of twelve years, and from venereal disease, possibly syphilis, five years before the meeting. His father was considered to have died from hæmolytic jaundice. He had one child, suffering from the same complaint. Three weeks prior to his admission to hospital he was said to have had a "stroke". Following this he had several seizures involving the right side of the body. His speech became very confused, and he had been mentally confused for the whole of the three weeks.

On January 12, 1937, he was admitted to Millbrook Rise Rest Home. On admission he was grossly confused, being completely disorientated and amnesic. He was very restless and destructive; he kept on pulling his bed to pieces and almost wrecked his room. He was noisy and most incoherent. He could not answer questions sensibly, nor did he appear to understand what was said to him. He was very untidy and filthy in habits, exposing himself and masturbating openly and without shame. The next day he was certified and transferred to the mental hospital. On examination he was very confused. He was apparently quite unaware of his surroundings, unable to concentrate and totally lacking in voluntary attention. His speech was rambling and incoherent. He was very restless, continually getting in and out of bed, pulling it to pieces and attempting in a futile manner to put it together again. He was very destructive, tearing up sheets and blankets, and very faulty in habits; he kept on stripping off his own clothes.

The following day he was able to answer a few simple questions. He appeared to be euphoric, and had delusions of wealth and grandeur, stating that he was Sir John Asley and that he owned four motor cars and had over £500 in the bank. Dr. Brothers remarked that expansive ideas were usually more pronounced in the typical case of expansive general paralysis of the insane. Physically he was very thin and sick looking, his weight being 52·5 kilograms (eight stone six pounds). A pronounced icteric tinge was noticeable in the skin and sclera. The heart and lungs were normal.

Examination of the abdomen revealed that the spleen was enlarged, palpable to the level of the umbilicus. Examination of the eyes revealed that the pupils were equal in size and reacted very sluggishly to light. The optic fundi were normal. The deep reflexes were equal,

but hyperactive. The superficial abdominal reflexes were present in all four quadrants. The plantar response was flexor in type. Romberg's sign was very pronounced. Owing to the mental condition it was quite impossible to determine the response to sensual stimuli. The Kline test elicited a positive reaction with the patient's blood and a strongly positive reaction with the cerebro-spinal fluid.

On January 15, 1937, he was put on potassium iodide mixture, 1·0 gramme (15 grains) three times a day. On January 22, 1937, he was apparently going downhill rapidly. His speech had by this time become very dysarthric, and it had become more difficult for him to understand what was said to him, and practically impossible for him to express himself. On January 26, 1937, he was inoculated with 10·0 cubic centimetres of malarial blood. On February 5, 1937, he appeared to be slightly improved; he was not nearly so noisy or restless. His speech was less slurred and he paid more attention to what was said to him; he said that his age was twenty-five years and that he had been at the hospital for six months.

On February 21, 1937, his malarial therapy was terminated after a brief and somewhat unsatisfactory course, because of his physical condition. He had become very anæmic and debilitated. The spleen reached nearly to the pelvis, although he had had three good rigors only. On March 3, 1937, he contracted a very severe attack of enterocolitis and rapidly lost weight. Mentally he was very restless and confused, saying that he was going to take all his attendants for a holiday and was going to work on Monday as usual. On March 9, 1937, he began to improve mentally and physically, and on March 12, 1937, a course of injections of "Tryparsamide" was commenced. On May 28, 1938, he had had twelve weekly injections of "Tryparsamide", a total of 33 grammes in all. The report stated that he was much better and much fatter; jaundice was still evident, but less intense. He had now become clean and tidy and not destructive, and was working continuously as a ward worker. He was somewhat irritable and bad-tempered, and resented any other patient interfering with his work. He could read letters, but not words.

On August 16, 1937, the blood still gave a strongly positive reaction to the Kline test.

By October 6, 1937, his physical condition was relatively good. He was very cheerful and a very good worker, and appeared to have lost his irritability. There was no evidence of delusions or hallucinations. On December 13, 1937, his condition was stationary. He was greatly improved, but somewhat mentally reduced. He was regarded as one of the best patient workers in the hospital, being very clean and tidy; and he took a fairly normal interest in everyday affairs.

Dr. Brothers said that at the time of the meeting the patient's case might be regarded as an arrested case of general paralysis of the insane. He would never regain mental normality, but he was quite well enough to live at home under sheltered conditions. Physically he was exceptionally well; his spleen was just barely palpable, his blood count was normal and his blood picture normal. His colour index was 90. His relatives stated that he was looking better now than he had for years previously.

#### Demonstration of "Cardiazol".

At the conclusion of the meeting Dr. Clara Burgess demonstrated the action of "Cardiazol" on two patients.

## NOMINATIONS AND ELECTIONS.

THE undermentioned have applied for election as members of the Western Australian Branch of the British Medical Association:

Drew, John Frederick Francis, M.B., B.S., 1930 (Univ. Melbourne), Roebourne.

Moss, Francis John, M.B., B.S., 1936 (Univ. Melbourne), Nannup.

# Medical Societies.

## MELBOURNE PÆDIATRIC SOCIETY.

A MEETING of the Melbourne Pædiatric Society was held on May 11, 1938, at the Children's Hospital, Carlton, DR. COLIN MACDONALD, the President, in the chair. The meeting took the form of a series of clinical demonstrations. Part of this report appeared in the issue of July 9, 1938.

#### Congenital Syphilis.

DR. A. P. DERHAM showed a girl, aged ten years, who in infancy had had what had been regarded as adequate treatment for congenital syphilis, but had developed bilateral chorioiditis and failure of vision in the left eye with pallor of the optic disk. She was admitted to the Children's Hospital with the history that for two and a half years she had been having "turns", which had become more frequent during the past seven months. The "turns" consisted of attacks of giddiness, occasionally ushered in by headaches and often followed by headache. The duration was usually only a few seconds, but occasionally she had fallen during an attack and had been unconscious for as long as three minutes. Under treatment the attacks had diminished in severity but increased in frequency. For two months she had noticed that the sight in the left eye was not so good as that in the right. Her eyesight had been tested twelve months earlier and was reported to be normal at that time.

One sister, aged fourteen years, was living in apparent good health. A brother had died from pneumonia at the age of five years. The child's mother had lost two stillborn infants, one a twin with the patient. The mother's serum had reacted positively to the Wassermann test, but that of the father had not been tested. The child's maternal grandmother had died of "a stroke" at a fairly early age, and the maternal grandfather had died of tertiary syphilis of the larynx in the Austin Hospital for Cancer and Chronic Diseases. His blood serum had also reacted to the Wassermann test.

When the patient shown by Dr. Derham was five months of age, Major-General R. M. Downes operated on her for intussusception. He had to perform a bowel resection with lateral anastomosis. As she was recovering, something in her facial appearance prompted him to have the blood tested, and the diagnosis of congenital syphilis was made when a positive report was obtained. Treatment by injections of "Muthanol", a bismuth preparation, had been carried out by Dr. Robert Southby.

On admission to hospital on April 19, 1938, the girl was 6·35 kilograms (one stone) below average weight for her age and height. Her mentality was satisfactory. The systolic blood pressure was 100, the diastolic pressure 65 millimetres of mercury. The vision in the right eye was $^6/_6$ and that in the left eye $^6/_{24}$. Dr. Orr examined the fundi and reported that on the right side the optic disk and macula were of normal appearance, but that there was a small patch of chorioiditis at the periphery. On the left side the disk was pale, the macula was normal, and small scattered patches of chorioiditis were present. By perimetry it was shown that the visual fields were of the full normal range. In other respects the systematic examination resulted in findings of a negative nature. The serum failed to react to the Wassermann test. There was no cellular increase and no excess of globulin in the cerebro-spinal fluid, either before or after an injection of "Acetylarsan"; and each specimen failed to react to the colloidal gold test and the Wassermann test. The convolutional markings were reported to be prominent in the skiagrams of the skull, but in other respects the radiographic appearances were not considered noteworthy.

Dr. Derham said that the case seemed to warrant a full discussion. Many epileptics were labelled idiopathic, but the child did present something organic. There was a history of congenital syphilis, and the eye changes could not be ignored; chorioiditis was present in each fundus,

though it was considered to be inactive; the left disk was pale and the vision was poor. If it could be believed that the failure in vision had occurred within the past twelve months, it was probable that a state of optic atrophy was in progress. In arriving at a diagnosis Dr. Derham thought that he could exclude the presence of a cerebral tumour; but it was difficult to decide whether the epilepsy was related to neurosyphilis, active or inactive, or whether the epilepsy was idiopathic and coincidental. He was inclined to take the view that the epilepsy was connected in some way with scarring of an old syphilitic lesion in the brain, because the fits had not responded in the ordinary way to the administration of bromides and "Luminal". Moreover, no other members of the child's family had had fits. The child was having a course of mercurial inunctions.

DR. ROBERT SOUTHBY said that he had been particularly interested in the patient shown by Dr. Derham. Major-General Downes had resected fully 5·0 centimetres (two inches) of ileum and 5·0 centimetres (two inches) of caecum and colon; the baby's recovery was remarkable. He had given the baby two courses of "Muthanol" injections. The first course consisted of ten injections of one cubic centimetre each, and as the serum still reacted afterwards, the second course of ten injections, each consisting of two cubic centimetres, was given. The serum failed to react in October, 1929, and again at two tests in 1930 and once each in 1931 and 1932. The cerebrospinal fluid did not react in 1930; and as the blood serum and spinal fluid still failed to react, Dr. Southby considered that the child did not have active syphilis and did not need further antisyphilitic treatment. He suggested the use of "Prominal" for the epilepsy, as "Luminal" had not been satisfactory.

Dr. Southby thought that another point of interest was the probability that the patient exemplified transmission of syphilis to the third generation. The mother was an only child; the maternal grandmother died young from a stroke; and the maternal grandfather died after excision of the larynx, which was the site of a gumma, not of malignant disease. The grandfather's blood serum reacted to the Wassermann test. Dr. Southby had been unable to obtain a specimen of the blood of the child's father, even by invoking the assistance of the usual medical attendant of the family. The patient's sister was in apparently good health at the age of six years, and he was unable to obtain a specimen of her blood. Four years later, however, she had interstitial keratitis, and the blood serum reacted strongly to the Wassermann test. The child's mother was given privately an intensive course of treatment for syphilis, and her blood serum failed to react when tested soon afterwards. When in 1930 she was again confined, the cord blood was examined, and that, together with specimens taken in 1931 and 1932 from the new baby, failed to react to the Wassermann test.

DR. H. BOYD GRAHAM thought that Dr. Southby would agree that other examples they had discussed together were more convincing than the present one of the transmission of syphilis to the third generation. In the present case it was not possible to exclude infection of the mother in the normal manner. That possibility was supported by the prompt response to treatment of the child's mother, and by the suspicious behaviour of the child's father in refusing to allow tests of his blood and of that of his other little girl.

### Supracondylar Fracture of the Humerus.

DR. RUSSELL HOWARD, on behalf of DR. H. DOUGLAS STEPHENS, described the case history, with skiagrams, of an injury to the right elbow of a little girl, aged six years, who had failed to arrive at the meeting. The child was admitted to hospital on February 25, 1937, one hour after the injury. Gross deformity had occurred about 3·75 centimetres (one and a half inches) below the elbow, with angulation and posterior displacement of the lower fragment. There was considerable swelling about the elbow and attempted reduction of the fracture was not successful. The arm was put up in the position of slight flexion only, because of the amount of swelling. A skiagram made after the attempt at reduction provided evidence of the persistence of backward displacement. After further flexion the position was still unsatisfactory, and skeletal traction was instituted, but without success. On March 8 the arm was again manipulated, without improvement of the position, and on March 11 the pin was removed. In skiagrams made on March 13 it could be seen that the position of the bony fragments was improved, though there was still some slight posterior displacement. Strapping extension was used next, but signs of radial paresis were noticed. On March 25, one month after the child's admission to hospital, a plaster slab was applied with 90° of flexion at the elbow, and dorsiflexion of the wrist. One week later the plaster was removed and movements were started with the fingers extended and the wrist dorsiflexed. When the child was discharged from hospital a few days later, movement of the elbow joint was considerably limited. Arrangements were made for daily massage, and two and a half months after the accident the patient had 137° of extension and 80° of flexion, as the limitations of movement at the elbow joint, the wrist movement had improved and that of the fingers was good.

Dr. Howard said that he had last seen the child on April 21, 1938, and he had been so struck with the remarkable degree of recovery from an injury which had been so severe and so resistant to treatment in the early stages that he had thought it worth bringing to the notice of members of the society. The skiagrams made on April 21, 1938, were shown to demonstrate firm union in good position, with a small bony spur on the medial side of the elbow joint.

DR. H. DOUGLAS STEPHENS commented on the rapid swelling after the injury, and said that the landmarks were obliterated when he first saw the child five hours afterwards. Apart from the fact that the carrying angle was not perfect, the child had complete restoration of function and the radial paresis had gone. Dr. A. J. Wood had shown, by means of serial photographs taken each month, together with skiagrams, that such a result was obtainable without operation. Dr. Wood had said that the result followed the recommendations made by Sir Robert Jones regarding posture of the arm: the elbow should be flexed as far as possible without interference with the radial artery, and if the swelling was lateral the ulnar border of the forearm should be placed towards the shoulder, but if the swelling was medial, the radial border should be placed towards the shoulder.

DR. W. KENT HUGHES said that he had expected to hear someone speak about open operations in the treatment of supracondylar fracture of the humerus. The late Hamilton Russell had written about the value of postural treatment long before Sir Robert Jones. In their long association at the Children's Hospital both Hamilton Russell and Dr. Kent Hughes had opposed the practice of operating in such injuries, and neither of them had found operation necessary.

### Slipped Capital Femoral Epiphysis.

DR. J. G. WHITAKER showed two patients with slipped capital femoral epiphysis: a boy, aged fifteen years, in whom the condition was bilateral, and a girl, aged twelve and a half years, who had the condition on the left side only.

The earlier symptoms in the case of the boy occurred nine months before the meeting. At that time pain began in the right hip, subsiding after rest, but leaving the leg with a sensation which he described as "stiffness" on walking again. A month later the tonsils were removed. Three weeks before the meeting, after a fall down the bank of a dam, pain in the right hip became much more severe and pain appeared in the left knee. After rest in bed for a week the left hip became painful also. The boy's general health had been very good, and he had grown rapidly and gained considerably in weight during the previous twelve months. When the boy was examined both legs were lying in the position of external rotation; internal rotation was painful and limited, as were all other movements at both hip joints. On walking,

both hips were held stiffly, with eversion of the feet; the antero-posterior arches of both feet were considerably diminished, almost to the stage of complete flat-foot. The diagnosis of bilateral slipped epiphysis was made on the evidence in the skiagrams by Dr. Colin Macdonald.

In the case of the girl, the disability had been noticed first two years before the meeting. She had fallen from a horse on her right hip, and the saddle had struck the left hip; but she had been able to walk next day without a limp. The development of a limp, with aching in the left hip while walking, had occurred only three months before the meeting, and she could not remember any new injury. Two days before admission to hospital, on April 3, 1938, she had tripped while walking over a bridge, throwing her weight on the left leg. She had not fallen, but had walked to school with difficulty; but she had been unable to walk home. On examination the left leg was found to be laterally rotated; movements at the left hip joint were limited, and pain was present, referred to the knee and to the anterior aspect of the proximal half of the thigh. Bilateral flat-foot was noted to be present. After examination of the skiagrams the diagnosis of slipped epiphysis of the left femoral head was confirmed; the neck of the bone was anteverted and the head was displaced backwards. Treatment by abduction and internal rotation of the flexed limb was carried out. A Kirschner wire was inserted through the lower end of the left femur, and traction was applied with a weight of nine kilograms (twenty pounds) on a Braun's frame. Later the amount of traction was reduced and a plaster spica was applied.

Dr. Whitaker said that the condition was considered to be due to a process of osteochondritis and local softening of the bone. It had been described as bilateral in 15% of cases. Not infrequently it occurred in the "fat boy" type, suggesting that there was some underlying condition, such as an endocrine dyscrasia. The little girl's injury was very similar to capital fracture in an old man; anteversion of the neck was associated with a tilting forward of the neck relative to the head. The prognosis was variable, and depended on complete reduction of the dislocation. If the head did not unite satisfactorily with the diaphysis, function suffered.

Dr. Whitaker referred to the three stages, the pre-slipping stage, the slipped or fracture stage, and the stage of malunion. The patient might present for treatment at any of these stages. Extension, internal rotation and reduction were required in the second stage, and reduction had to be maintained till union was firm. In the third stage osteotomy was required to correct the eversion of the limb, and would appear to be the only course open. The boy's injury seemed to be between the first and second stages, and he proposed to treat him by means of moderate extension and a degree of internal rotation governed by the radiographic appearances.

DR. COLIN MACDONALD said that radiologists learned to expect the lesion under discussion when a plump child arrived on account of limp after slight trauma. All that could be seen at the time in the skiagrams might be condensation of ossific tissue around the epiphyseal junction. After a latent period of some months' duration definite *coxa vara* developed. If more lateral skiagrams were taken, then it was usual to see that the neck and shaft had slipped forward and the head had rotated through 50° or more, until the neck impinged on the outer lip of the acetabulum, causing the limitation of all movements at the hip joint. Owing to overcorrection, sometimes the position of *coxa valga* was apparent in the skiagrams. Dr. Macdonald added that Dr. Whitaker and he were going to try to confirm the value in diagnosis at the early stage of a sign, described recently by Milch, related to the subcapsular line.

DR. J. B. COLQUHOUN reminded members that he had discussed the subject in THE MEDICAL JOURNAL OF AUSTRALIA of June 6, 1936, at page 799, and of April 23, 1938, at page 758. The condition occurred between the ages of seven and seventeen years. Dr. C. H. Osborn had shown a series of films at one of the meetings, illustrating the various stages. Dr. Colquhoun referred to the value of employing the manœuvres of Jahss and Leadbetter. He considered that weight-bearing should be allowed only gradually, after prolonged rest in bed, and mentioned the use of Trumble's splint in these cases.

DR. BRYAN KEON-COHEN referred to the common association of the lesion with endocrine disorders; he said that at times the condition of a fat boy with a limp could be diagnosed at sight as slipped epiphysis. He stated that at Liverpool and Oswestry the custom was to treat the condition by adduction, hyperextension and internal rotation with traction; in adduction it was easy to reduce the epiphyseal displacement by traction. He drew attention also to the small margin of time available after the onset of trauma in which it was practicable to do anything of value; if traction was not applied within three or four weeks of the injury that caused the displacement, it was difficult or impossible to effect reduction. He also said that he had seen a case in which the epiphysis on the other side had slipped while the patient was in bed undergoing treatment for the first one. He recalled an example of bilateral slipped epiphysis. The boy was nineteen years of age, and the first lesion had occurred two and a half years earlier; he added that the patient had incompletely descended testes and an unbroken voice. He stated that on the evidence of skiagrams it had been shown that the procedure of drilling the epiphysis after reduction shortened the fusion time by approximately one-third, and that high subtrochanteric osteotomy was usually of benefit when malunion had occurred.

DR. THOMAS KING drew attention to the soft, spongy, abnormal state of the bone, and said that the neck and upper third of the femur were affected. The patients at a later age had a definite curving of the neck. He thought that thin subjects developed *coxa valga* and the fat ones *coxa vara*. The great danger, in his opinion, was bony ankylosis. If the displacement was not overcome with traction, he advocated osteotomy in an attempt to avoid osteoarthritis. He took a large wedge, about 3·75 centimetres (one and a half inches) in length, out of the base of the trochanter. This enabled him to move the leg round, bringing the weight of the body vertically through the neck. Pressure reconstituted bone, but sheering increased the deformity. He condemned the use of Schanz screws on account of the risk of slow infection and consequent arthritis.

## Pathological Exhibits.

DR. REGINALD WEBSTER presented the following pathological specimens.

### *Ovarian Teratoma.*

The first specimen was a large tumour, weighing 1·9 kilograms (four and a quarter pounds), which had been removed from a girl, aged eleven years, by Dr. J. B. Colquhoun. The clinical notes stated that an abdominal swelling had first been noticed three months earlier and that it had advanced rapidly in the interval.

Dr. Webster said that he had identified the tumour as an ovarian teratoma. As would be seen, it was a polycystic, but for the major part solid, tumour, and in this respect differed from other specimens of teratoma of the ovary which he had collected in the pathological museum. The more usual type in children was the so-called ovarian dermoid, of which he showed an example. The conspicuous feature was a large cyst, which contained sebaceous material and hairs, and at one side of the cyst was a protuberance or lateral eminence. In the lateral eminence of such cysts were to be found a variety of tissues, bone, cartilage, unstriped muscle, glandular epithelium, representing the respiratory and alimentary tracts, and nervous tissues.

Very much less common in the ovary than the cystic form was the solid teratoma, in which a similar variety of tissues might be represented. In the testicle, on the other hand, the solid type was the usual occurrence.

Dr. Webster drew attention to the fact that he had mentioned nervous tissues among the diverse constituents of teratomata. The majority of text-books made little more than passing reference to neural components of teratomata, and it had remained for Dr. R. A. Willis, of the Alfred Hospital, to show to what a large extent nervous tissue participated in the structure of these composite masses.

In his lucid and authoritative papers on the subject Willis recorded having identified neural components with certainty in 18 out of 22 teratomata subjected to exhaustive histological examination by his "serial slab" method. This procedure ensured a very searching analysis and represented nothing less than histological heroism. Eight of the 22 complex masses were ovarian teratomata, and no less than seven of the eight located in the ovary were the so-called ovarian dermoids.

The polyglot tissues were not confined to the lateral eminence in ovarian dermoids, but were to be found in the cyst wall also; and there were no grounds for the distinction which had been drawn between ovarian dermoids and other teratomata of the ovary. The term "ovarian dermoid" was in fact a misnomer.

Dr. Webster then showed a lantern slide prepared from a photograph of a complete cross-section of the tumour under discussion, and added that in a single microscopic section he had noted the presence of cartilage, glandular epithelium and nervous tissue.

Dr. Willis had shown that many of the cysts in polycystic teratomata such as this were of the nature of ependyma-lined cavities in central nervous tissue. Fringes of tissue with the structure of the chorioid plexus were to be found if the search were sufficiently thorough; and secretory activity on their part would afford a satisfactory explanation for the presence of the clear fluid which the cysts contained.

Such cavities might be lined partly by neuro-epithelium and partly by stratified squamous epithelium, and sometimes the transition from one to the other occurred abruptly. In teratomata containing early neuro-epithelium this was often seen in continuity with a simple, flat and non-distinctive epithelium. This feature was well illustrated in a photomicrograph which Dr. Webster showed, prepared from a microscopic section of the particular tumour he had exhibited.

The epithelium shown in the photomicrograph was reminiscent of that of the medullary tube, the definition of which might be said to be the first step in the differentiation of the nervous system. A sharp change in character from a simple flat epithelium to a high columnar epithelium was well shown.

This indifferent epithelium was endowed with an inherent potency to develop into stratified squamous epithelium as well as neuro-epithelium, and thus it came about that occasionally both types would participate in the lining of a single cyst.

Dr. Webster said that neuroglia also figured largely among the neural components of teratomata, and his next photomicrograph showed a highly cellular area, the constituent cells of which he regarded as primitive spongioblasts. It was on the occurrence of such fields, together with others which showed active hyperplasia of an apparent glandular epithelium, that he based the opinion of malignancy which he had expressed in his report upon this tumour.

An interesting feature of malignant change in teratomata was that such metaplasia was frequently of polyvalent character, affecting derivatives of different germinal layers simultaneously. A similar process was to be observed in the malignant embryoma of the kidney known as the Wilms's tumour.

### *Biliary Cirrhosis.*

Dr. Webster showed photomicrographs of the liver of a girl, aged eleven years. The patient was said to have suffered from repeated attacks of bronchitis ever since infancy, and during the period of her attendance at the Children's Hospital the diagnosis of bronchiectasis was established both clinically and radiographically.

The autopsy had been carried out by Dr. V. L. Collins, who secured specimens for subsequent investigation. It was impossible to exaggerate the deplorable condition to which the lungs had been reduced and the offensive character of the contents of the large bronchiectatic cavities.

The liver was enlarged, firm and smooth, with a rather sharp edge. Numerous greyish areas were observed studding the cut surface of the liver, and further investigation was based on the probability of the presence of amyloid disease. The hepatic tissue failed, however, to give the iodine reaction, and in microscopic sections no lardaceous deposit could be found in the capillaries and arterioles. Instead, a condition of biliary cirrhosis, with great increase in the fibrinous tissue of the portal tracts and apparently innumerable bile ducts, was the striking feature of the histological picture.

Dr. Webster remarked that biliary cirrhosis was a rather loosely used term; but he employed it to denote that type of hepatic fibrosis induced by the activity of infectious agents which reached the liver via the bile ducts. The condition present in this girl's liver was described by Mallory and designated by him infectious cirrhosis in 1911.

It was not difficult to suggest the manner in which the biliary system became infected in this girl, when it was remembered that for several years at least she must have swallowed large amounts of particularly offensive purulent sputum.

Dr. Webster said that the multiplicity of bile ducts in the photomicrographs which he exhibited was apparent rather than real. During the stage of active inflammation the smaller ducts, distended with inflammatory products, became stretched and elongated; by the subsequent contraction of the newly-formed fibrous tissue in the portal tracts the elongated bile ducts were rendered tortuous, so that a cross-section gave an appearance of greatly increased numbers.

### *Splenic Anæmia.*

Dr. Webster's third specimen was a spleen which he had received for examination a week prior to the meeting. Dr. J. B. Colquhoun had performed splenectomy for a little girl considered to be the subject of Banti's disease. She had already suffered several attacks of hæmatemesis.

Dr. Webster said that he received such spleens with little enthusiasm, regarding each successive example as just another spleen of splenic anæmia, from which little histological satisfaction was to be anticipated. The one purple patch in a long series of spleens barren of any distinctive histology was a Gaucher spleen, and this he had duly recorded. In operating upon this little girl Dr. Colquhoun had been good enough to remove a small wedge of liver tissue as a biopsy specimen, thus providing an opportunity of studying the liver during the currency of the so-called Banti's disease.

The hepatitis revealed in the microscopic section of the liver was severe to an extreme degree. The normal architecture of the hepatic parenchyma was totally destroyed. Liver cells, much degenerated, were found in detached groups rather than in lobules, such detachment having been effected by an intense and very cellular inflammatory reaction. As far as could be judged from the one small section, the hepatitis was in the active cellular stage rather than the terminal and more or less quiescent cirrhotic stage.

In conclusion, Dr. Webster said that, being deliberately provocative, he submitted that there was no scientific basis for the removal of the spleen in splenic anæmia, nor was there in Gaucher's disease, in which the spleen was only doing its duty in storing kerasin, as were also the liver, the lymphatic glands, and particularly the bones.

There might still be a clinical indication for the operation of splenectomy in these conditions, and this was the point upon which he was endeavouring to provoke discussion.

# Correspondence.

## DR. W. J. PENFOLD.

Sir: Having gathered from recent advertisements in the Press that Dr. W. J. Penfold has retired from the directorship of the Baker Medical Research Institute, Melbourne, I should like, as an old personal friend and admirer of the great scientific work of Dr. Penfold, to record in your columns my regret and, I am sure, that of a large number of medical men throughout Australia, at his all too premature retirement from the field of active medical research.

Dr. Penfold had not been long in Australia as first director of the Commonwealth Serum Laboratories before he had placed that fine institution on a plane as high as any in the world, his work especially on the production of a diphtheria antitoxin of high concentration and potency giving the laboratories an honoured place in the esteem of international workers. The later work of Penfold as director of the Baker Institute, and the long series of brilliant researches he inspired in his associates at the institute and among the clinical staff of the Alfred Hospital are familiar to all your readers. As a bacteriologist Penfold has no superior in Australia and few equals abroad, and there are few subjects in that science in which a search of the literature does not bring one back to some fundamental work of Penfold's, that on the growth rate of bacteria, for example.

Dr. Penfold is not only a great laboratory worker, but, what was most valuable to this country, his high sense of scientific honour and his extraordinarily keen critical faculty place him in the front rank of Australian scientists and have laid Australian science deeply in his debt.

On his retirement Dr. Penfold takes with him the deep respect and affection of a very large number of Australian doctors and men of science, and their regret that physical infirmity has cut short so brilliant and inspiring a career.

Yours, etc.,

J. V. Duhig,

Professor of Pathology,
University of Queensland.

Brisbane,
June 11, 1938.

## REGIONAL ENTERITIS.

Sir: Dr. Skewes reports a case of regional enteritis in the current issue of the journal. He says it is the first to be reported in Australia. I said the same thing when I reported a case in the journal last year. I wonder have any other observers made a similar report before that again?

Yours, etc.,

V. J. Kinsella.

235, Macquarie Street,
Sydney,
June 27, 1938.

## THE LATE LESLIE WYLIE NORMAN GIBSON.

Sir: I would like to add a personal tribute to the memory of Dr. Leslie Gibson. We landed in college at Sydney together from the wilds of Queensland, and he was a loyal friend to me till the day of his death.

Blessed with a happy nature, he saw evil in no one.

Ever since his first contact with Liverpool Sir Robert Jones and McMurray were his heroes, and how well he upheld their tradition, not only in the soundness of his work, but in his kindly humanity and loyalty to his colleagues. The photographs of "Robert" and McMurray were on his desk, and he told me once that he never heard Sir Robert speak evil of anyone, even under great provocation. The same could be said with equal truth of Leslie Gibson. The writer will not easily forget his help so gladly given over many orthopædic problems—no vague outline of treatment, but detailed instructions and little tips of his own, and all backed by the profound knowledge and wisdom he acquired at his beloved Liverpool.

It is hard to realize he is gone. He said nothing of his impending operation when I last saw him a few weeks before his death. No longer can I take my fracture problems to his kindly notice, and I and many others have lost a true friend.

Yours, etc.,

"H.W.A."

June 28, 1938.

## NATIONAL HEALTH INSURANCE.

Sir: Years ago, when invited to address the meeting of a friendly society lodge, I witnessed the introduction of several new members. In welcoming these healthy young men the chairman congratulated them on the fact that their funeral expenses were now provided for. The present National Insurance Bill is similarly amusing. The workers are to provide for the cost of sickness and of pensions at the expense of their health.

The evidence is overwhelming that the chief cause of sickness is poverty. A deduction is to be made from wages, so that the insured will have less money to buy the necessities of health, whilst the employers must also make a contribution which will be added to the cost and therefore to the price of those necessities.

Why should we continue to bury our heads in the sands of service and charity when it is plain for all to see that "science has repeated on the grand scale the miracle of the loaves and fishes—but they are not being distributed" (Sir Gowland Hopkins)?

The medical profession is increasingly qualified to give effective service, both preventive and curative, in return for which it desires to receive those goods and services which the community in its turn is increasingly able to deliver. The function of the monetary system should be to effect the necessary exchanges, and it is owing to its failure that the community suffers in poverty and insecurity.

It is deplorable that the medical profession did not base its resistance upon these principles. As a local journal put it, "eleven shillings or fourteen shillings be damned".

Yours, etc.,

John Dale.

Melbourne,
July 1, 1938.

# University Intelligence.

## THE UNIVERSITY OF MELBOURNE.

We have been asked to publish the following notice.

### The Mathison Memorial Lecture.

The Mathison Memorial Lecture will be given in the Public Lecture Theatre, Arts Building, University of Melbourne, on Monday, August 8, at 8 p.m., by Professor Whitridge Davies, Professor of Physiology in the University of Sydney. The subject of the lecture will be "Oxygen Lack: Its Causes and Treatment". Professor Davies is a recognized authority on respiratory physiology, not only in its academic aspects, but in its clinical applications. The pioneer work of the late Dr. G. C. M. Mathison, who lost his life in Gallipoli, has an established place in medical science, and it is fitting that the address in his memory should be given by an expert in the same field. No charge will be made for admission, and all members of the medical profession are invited to attend.

# Obituary.

## DONALD STEWART MacCOLL.

WE are indebted to Dr. H. Boyd Graham for the following account of the career of the late Dr. Donald Stewart MacColl.

By the death of Donald Stewart MacColl, which occurred on May 21, 1938, the community has lost an honoured Christian gentleman, and the members of the medical profession a distinguished colleague, whose standard of service will remain worthy of emulation.

He was born on September 24, 1862, near Fort William, Inverness-shire, Scotland, where his father, John MacColl, was a farmer. He received his early education at the Glasgow High School and entered the medical school at Glasgow University about 1878. He was hampered during his medical course by ill health, and after obtaining his qualifying degrees in 1884 and 1885 came to Australia in search of a more favourable climate. He commenced general practice at Erin Street, Richmond, Melbourne, in 1889, and remained hard at work until his health broke down again in 1900. During the following five years he acted as *locum tenens* at Fremantle and other places, and made a few voyages as ship's surgeon. In 1905, after obtaining the degree of Doctor of Medicine, he commenced practice in Melbourne as a specialist in diseases of the chest.

On account of the necessity to safeguard his health he refrained from seeking honorary appointments and was ineligible for war service. He obtained a big reputation as an excellent diagnostician and won the confidence and esteem of his colleagues, patients and other friends. In 1913 he was the prime mover in the establishment of the Glenelg Sanatorium on the outskirts of Box Hill, and was soon joined in partnership in this venture by Dr. S. V. Sewell. His pioneer work in this provision of private accommodation suitable for tuberculous patients has proved of great value to the community, and the expansion which has occurred is good evidence of the appreciation and support of the public.

Dr. A. E. Rowden White in a letter of sympathy states that Dr. MacColl "had so many splendid interests that it is difficult to say which was his best—they were all excellent".

> But there was one which stamped him as a great citizen and that was his foundation of "Glenelg". How proud he must have been in realizing that largely due to his efforts it has been and still is a blessing to so many patients.

Reared on a farm, Dr. MacColl was a good horseman and was fond of riding. His ill health excluded him from many activities; but he liked to take exercise on horseback.

He was an honorary life deacon of Collins Street Baptist Church, a member of the China Inland Mission for over forty years, and was much appreciated as a speaker at church services and Christian conventions. His home life was essentially happy and irradiated by his buoyant Christian faith. He retained a youthful spirit and was full of fun and humour. He spent a happy married life for nearly forty-five years. We wish to assure his widow and daughters of our consciouness of their great loss.

Dr. Sidney V. Sewell writes:

It is difficult to realize that the vital, staunch, fun-loving and Puckish dialectician Dr. Stewart MacColl has passed on. I had the honour to be associated with him at Glenelg Sanatorium for many years, and in all that time I do not remember a single harsh word.

He was an extremely able chest physician, and many thousands of patients have benefited by his skill and will miss his sane and kindly help and advice. I joined him at Glenelg in 1913, just as all the hard work of establishing the sanatorium had been completed, and found him ever an unselfish and generous co-worker, prepared always to spare and help me often when to do so meant no little self-sacrifice.

I feel I have lost a very real friend, and offer my deepest sympathy to his wife and two daughters.

## WARREN JAMES FEARNLEY.

WE regret to announce the death of Dr. Warren James Fearnley, which occurred on July 2, 1938, at Charters Towers, Queensland.

## HAROLD EDGAR ATHELING JACKSON.

WE regret to announce the death of Dr. Harold Edgar Atheling Jackson, which occurred on July 10, 1938, at Bendigo, Victoria.

# Proceedings of the Australian Medical Boards.

## TASMANIA.

THE undermentioned have been registered, pursuant to the provisions of the *Medical Act*, 1918, of Tasmania, as duly qualified medical practitioners:

Hattam, Harold Bickford, M.B., B.S., 1938 (Univ. Melbourne), Public Hospital, Launceston.

Meagher, John Sheehy Luxford Aloysius, M.B., B.S., 1923 (Univ. Melbourne), Hamilton.

Crabbe, Gavin Murray, M.B., B.S., 1927 (Univ. Adelaide), Lachlan Park.

## NEW SOUTH WALES.

THE undermentioned have been registered, pursuant to the provisions of the *Medical Act*, 1912 *and* 1915, of New South Wales, as duly qualified medical practitioners:

Hossack, Francis Kenneth, M.B., B.S., 1938 (Univ. Sydney), Brisbane General Hospital, Brisbane.

Inglis, James Alexander, M.B., B.S., 1937 (Univ. Sydney), Brisbane General Hospital, Brisbane.

Watch, Norman Bennington, L.R.C.P., L.R.C.S., 1906 (Edinburgh), L.R.F.P.S., 1906 (Glasgow), D.P.H., R.C.P.S., 1910 (Ireland), D.T.M., 1927 (Univ. Sydney).

## NOTICE.

WE have been asked to publish the following notice.

### A Survey of Pneumococcal Infections.

With a view to establishing the incidence of the various types of pneumococci occurring in New South Wales, a survey of pneumococcal infections is being carried out at the Kanematsu Memorial Institute of Pathology, Sydney Hospital, with the assistance of a grant from the National Health and Medical Research Council.

The cooperation of medical practitioners in submitting for bacteriological examination specimens of sputum from cases of pneumonia would be greatly appreciated.

Specimens, with clinical diagnosis and details of the patient's name and age attached, may be left with the gate porter at Sydney Hospital, Macquarie Street, or will be collected by messenger if Miss Stobo, first floor, pathology Department, Sydney Hospital, is notified. The telephone number of Sydney Hospital is BW 1291.

## Books Received.

LOOKING BACK: SOME EARLY RECOLLECTIONS, by Mrs. R. H. Todd; 1938. Australia: The Snelling Printing Works Limited. Demy 8vo, pp. 50, with illustrations. Price: 2s. 6d. net.

## Diary for the Month.

JULY 19.—New South Wales Branch, B.M.A.: Ethics Committee.
JULY 20.—Western Australian Branch, B.M.A.: Branch.
JULY 21.—New South Wales Branch, B.M.A.: Clinical Meeting.
JULY 22.—Queensland Branch, B.M.A.: Council.
JULY 26.—New South Wales Branch, B.M.A.: Medical Politics Committee.
JULY 27.—Victorian Branch, B.M.A.: Council.
JULY 28.—South Australian Branch, B.M.A.: Branch.
JULY 28.—New South Wales Branch, B.M.A.: Branch.
AUG. 2.—New South Wales Branch, B.M.A.: Organization and Science Committee.
AUG. 3.—Western Australian Branch, B.M.A.: Council.
AUG. 3.—Victorian Branch, B.M.A.: Branch.
AUG. 4.—South Australian Branch, B.M.A.: Council.
AUG. 5.—Queensland Branch, B.M.A.: Branch.
AUG. 9.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
AUG. 12.—Queensland Branch, B.M.A.: Council.
AUG. 16.—New South Wales Branch, B.M.A.: Ethics Committee.

## Medical Appointments.

Dr. M. B. Morgan has been appointed Government Medical Officer at Walcha, New South Wales.

* * *

Dr. J. A. Cahill has been appointed Public Vaccinator at North Fitzroy, Victoria.

* * *

Dr. E. Clement has been appointed a Medical Officer in the Medical Branch of the Department of Public Instruction, New South Wales.

* * *

Dr. C. H. M. MacMahon has been appointed a Medical Officer in the Department of Mental Hospitals of New South Wales.

* * *

Dr. S. L. Cook has been appointed Second Assistant Medical Superintendent of the Hospital for the Insane, Toowoomba, Queensland.

* * *

Dr. K. E. McGinn has been appointed Medical Officer of Health to the Quairading Road Board, in accordance with the provisions of *The Health Act*, 1911-1937, of Western Australia.

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The following honorary appointments have been made at the Mareeba Babies' Hospital, South Australia: Dr. M. T. Cockburn, Physician; Dr. H. S. Covernton, Medical Officer and Medical Officer to Nursing Staff; Dr. R. G. C. de Crespigny, Assistant Physician; Dr. C. A. Finlayson, Assistant Physician; Dr. F. N. Le Messurier, Medical Officer; Dr. H. M. Mayo, Consulting Responsible Medical Officer; Dr. A. M. Mocatta, Assistant Physician; Dr. W. C. T. Upton, Dermatologist; and Dr. F. B. Moore, Visiting Ophthalmologist.

## Medical Appointments Vacant, etc.

**For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", pages XX to XXII.**

ARAMAC HOSPITAL, ARAMAC, QUEENSLAND: Medical Officer.
METROPOLITAN INFECTIOUS DISEASES HOSPITAL BOARD, ADELAIDE, SOUTH AUSTRALIA: Resident Medical Officer.
THE PRINCE HENRY HOSPITAL, SYDNEY, NEW SOUTH WALES: Medical and Surgical Fellowships.
WILLIAMSTOWN, FOOTSCRAY AND DISTRICT GENERAL HOSPITAL, WILLIAMSTOWN, VICTORIA: Radiologist.

## Medical Appointments: Important Notice.

**MEDICAL PRACTITIONERS are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.**

| BRANCHES. | APPOINTMENTS. |
|---|---|
| NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney. | Australian Natives' Association.<br>Ashfield and District United Friendly Societies' Dispensary.<br>Balmain United Friendly Societies' Dispensary.<br>Leichhardt and Petersham United Friendly Societies' Dispensary.<br>Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney.<br>North Sydney Friendly Societies' Dispensary Limited.<br>People's Prudential Assurance Company Limited.<br>Phœnix Mutual Provident Society. |
| VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne. | All Institutes or Medical Dispensaries.<br>Australian Prudential Association, Proprietary, Limited.<br>Mutual National Provident Club.<br>National Provident Association.<br>Hospital or other appointments outside Victoria. |
| QUEENSLAND: Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17. | Brisbane Associate Friendly Societies' Medical Institute.<br>Proserpine District Hospital.<br>Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their Agreement to the Council before signing. |
| SOUTH AUSTRALIAN: Secretary, 178, North Terrace, Adelaide. | All Lodge appointments in South Australia.<br>All contract Practice Appointments in South Australia. |
| WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth. | All Contract Practice Appointments in Western Australia. |

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